

Financial Statement Analysis

Principles and Technique

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Third Edition

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TO
WESLEY CLAIR MITCHELL
WHOSE TEACHINGS HAVE INSPIRED THIS BOOK

Everyone realizes that we should measure the phenomena which we treat whenever we can, and that increasing precision in measurement is a scientific gain. But there is danger that the seductions of statistical technique may blind enthusiasts to the imperfections and inadequacies of the data. One who elaborates statistical series in ingenious ways may get as far out of touch with reality as one who excogitates a set of speculative assumptions.

—Wesley Clair Mitchell

"The Present Status and Future Prospects of Quantitative Economics" American Economic Review, XVIII, supp., pp 39-41, March, 1928

Preface

The object of this book is to provide an exposition of sound principles for a technique of analysis and interpretation of the financial statements of business enterprises. The methods presented are those which have been devised by analysts over a period of some sixty years, and they have been tested by the author in practice and in the classroom. Particular attention has been given to the limitations of each of the devices discussed and the kind of information that each device yields. However, it is not intended to prescribe a rigid procedure to be followed in analyzing all enterprises, but rather to equip the reader with analytical tools from among which he may later select such as will be most helpful in any work he undertakes.

The applications of the principles developed have been limited to the analysis of commercial and industrial enterprises, but they may be applied to the other types as well. It is believed that the analysis of such types of businesses as railroads, banks, insurance companies, and so forth, should be undertaken only by those who understand the organization and technical problems of such enterprises, and, therefore, it should be treated in specialized works in these fields.

An understanding of the statements which are the final product of the accounting processes requires a knowledge of those processes. Consequently, in the opinion of the author, only persons with such knowledge are properly equipped for the analysis of financial statements. For this reason the present work assumes on the part of the reader a familiarity with accounting. Nevertheless, it has been deemed necessary to discuss some of the more elementary concepts and principles, though from a point of view different from that generally found in the textbooks and in a

manner more closely related to interpretation. This is done in Part One, "The Problem and Its Setting." Part One also contains, in Chapter 5 on "Trends in Accounting Principles and Procedures," a review of the significant changes that have taken place during the past two decades as the result of a concerted effort on the part of accountants to improve accounting procedures.

Part Two, "The Technique of Financial Statement Analysis," contains an exposition of the various devices available for the analysis of the data contained in the financial statements as a basis for the interpretation of the condition of a business enterprise. The discussion of investment analysis in Chapter 15 has in this edition been enlarged.

The problem of the variation in the unit of measurement, that is, the fluctuation in the purchasing power of money, was given consideration throughout the first and second editions. However, no exposition of a procedure for adjustment of the financial statement data to a common base was attempted because the subject existed only in theoretical form and no particular procedure had been accepted for such purpose. Although at the time of this writing no adjustment procedure has been adopted in practice to any considerable extent, interest in the problem has been growing, as evidenced by the attention given it by speakers and writers. Therefore, in order to acquaint the reader with the details of what appears to be the method sponsored by the majority of those in favor of price-level adjustment—that of adjustment by an index of the general price level—the application of this procedure to an illustrative case has been given in Chapter 4, a new chapter on "Price-Level Adjustment."

In using the text for a course in financial statement analysis, it is recommended that assignments be made concurrently in both the first and second parts in order that the student may not lose interest during the early part of the course because of "too much theory." The accompanying book of problems and questions has been designed for a one-semester course and provides questions based on the various chapters of the text in addition to 14 laboratory assignments. The laboratory material contains both hypothetical and actual cases, from which the instructor may make selections to suit the needs of his students. The Appendix, which contains reproductions of the financial statements of various ac-

tual companies, will be found helpful in discussing contemporary procedure in the construction of financial statements

The author desires to acknowledge his indebtedness to the many students of the City College of New York and New York University who have through the years aided in the development of this book, to those who aided in the preparation of the first edition his colleagues, Cornelius M. Ahearn, Lennart G. Byngelsson, John D. Burton, Frank A. Dunn, Harry L. Kuntzleman, Leo Rosenblum, Emanuel Saxe, the late John P. Smith, and Max Zimering, for their patience in discussing his ideas, to R. Parker Eastwood, of the Columbia University Graduate School of Business, for his critical reading of the parts of the manuscript involving statistical technique, to Ralph C. Jones, of Yale University, for various suggestions, and to H. A. Finney for the beneficial results obtained from his critical reading of the entire manuscript. He further wishes to express his gratitude to the managing editors of *The Journal of Business Education* and *The New York Certified Public Accountant* for permission to reproduce certain material previously published in these magazines, and to the late Robert L. Mitchell, management consultant, of New York, who never stinted of time and effort to give advice and encouragement in the preparation of both the first and second editions. For valuable suggestions in the preparation of the third edition, the author is grateful to James A. Cashin, Supervisor of Management Procedures, St. Regis Paper Company, Dudley W. Cuny, of Southern Methodist University, Edward G. Eriksen, of Wayne State University, Brian Galvin, of Queen's University, Canada, William C. McGrew, of the University of Oklahoma, and Hedwig Reinhardt, of The College of the City of New York.

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Significance and Development of Financial Statement Analysis

Financial Statements Defined

The term *financial statements*, as used in modern business and in this book, refers to the two statements which the accountant prepares at the end of a period of time for a business enterprise. They are the balance sheet, or statement of financial position, and the income statement, or profit and loss statement. It has become customary for corporations to add a third statement, the statement of retained earnings (surplus).

Various schedules are often used to supplement the data contained in the financial statements. They consist of such schedules as the schedule of property, plant, and equipment, the schedule of reserves (allowances) for depreciation, depletion, and amortization of property, plant, and equipment, the schedule of reserves, and so forth. These schedules will be considered part of the statements to be analyzed, in fact, they constitute the first step in the analysis of certain data in the balance sheet and income statement.

The financial statements provide a summary of the accounts of a business enterprise, the balance sheet reflecting the assets, liabilities, and capital as of a certain date and the income statement showing the results achieved during a certain period.

Interpretation of the Financial Statements

It is now considered part of the accountant's work to interpret the statements which he has constructed. By so doing he

reaches what should be the goal of his labors the supplying of information that will aid in the management of a business.

In the earlier days of accounting, the more important contributions to the subject of financial statement interpretation were made by credit men and investment analysts, for it was they who faced the necessity of obtaining from the statements information which was not forthcoming from the accountants. In more recent times the demand for analytical information by business executives, bankers, and others has had the effect of influencing the accountants to attempt to supply it. This is as it should be, for the accountants, fully understanding the nature of the statements, are most competent to develop a logical technique of analysis. As a result, many public accountants now give detailed analyses in their audit reports, a practice that was unknown some years ago.

Interpretation Requires Analysis

The financial statement figures consist not only of account balances, which usually are the result of many debit and credit entries for a variety of transactions, but also combinations of account balances. As a result, the figures often do not represent homogeneous data. It is thus sometimes difficult to interpret them, while, on the other hand, the countless transactions which may have led to the final figures are not susceptible of interpretation. Between these two extremes—the figures in the statements and the entries of which they are the result—are various points at which interpretation may be made. To obtain these intermediate figures requires an analysis of the totals in the statements into their components, a process which usually is partly present in the statements and which it is necessary to continue in the inverse direction of the accounting processes—that is, from the statements back toward the original entries recording the many transactions that have taken place. The following will serve as an illustration.

An important point of information is the extent of the debts of a business at a particular date, this information is indicated by the item "total liabilities." But the liabilities fall, for practical purposes, into two distinct classes: those that are due within a relatively short period of time, such as a year, which the accountant calls "current liabilities," and those with a later maturity, the "long-term liabilities," usually represented in the case of a cor-

poration by its funded debt. To facilitate interpretation, the current and long-term liabilities are usually segregated in the balance sheet, and such segregation may be regarded as the first step in the analysis of the liabilities.

To know the amount of debts due within a year is usually not sufficient. It would make a considerable difference whether certain amounts are due within a month or within possibly a period of twelve months. Hence it is desirable to have a further analysis of the current liabilities according to the amounts due in thirty days, sixty days, ninety days, and so forth. This further information is not commonly found in the statements and would be obtained by aging the accounts.

Interpretation Requires Comparison

Mere examination of the components of a statement cannot be expected to lead to definite conclusions in regard to the financial status of a business. After the statement has been dissected into its constituents, it is necessary to measure the relative magnitudes of the various entities. If, for example, the current liabilities of a certain business at a particular date amount to \$25,000 and an opinion is desired as to whether it is probable that the business will be able to meet these obligations, the amount of the liabilities may be compared with the amount of the assets that the business has available to pay them—the cash and such assets as receivables and merchandise that will be converted into cash in the normal operation of the business during the coming year. If the current assets amount to, say, \$100,000, the analyst would probably consider the debt-paying ability of the business satisfactory.

However, the comparison of the debts with the total wealth which will in the course of operations become available for paying them will not give a conclusive answer. If in the above illustration the \$100,000 of current assets is composed of, say, \$95,000 of merchandise which has to be sold on account on thirty- or sixty-day terms before this amount of wealth can be used to liquidate debts, the analyst would probably consider the situation unsatisfactory, especially if the liabilities of \$25,000 are due in the near future.

Also, if the analyst found the proportion of current assets to current liabilities satisfactory but, upon aging the amounts payable and receivable, he found current liabilities due before a suffi-

cient amount of cash would be received from customers to pay them, he would probably consider the situation unsatisfactory.

It is thus seen that in order to interpret the position of an enterprise it is necessary not only to separate the totals given in its financial statements into their components but also to make comparisons of the various components and to examine their content. In addition, a study of the changes that have occurred in the business over several periods should be made, such a study is carried out by examining the trends of the various important factors in a series of statements.

Financial statement analysis is, therefore, largely

- (i) a study of relationships among the various financial factors in a business, as disclosed by a single set of statements, and
- (ii) a study of the trends of these factors, as shown in a series of statements.

To facilitate and simplify the analysis, a methodology has been developed over the years. This methodology, however, is in an early stage of development, so that, for a full understanding of the fundamental problems of financial statement analysis, some knowledge of the history of both the development of financial summaries and the methods for their analysis is helpful.

Historical Development of Financial Summaries

The need for a summary of the accounts of a business enterprise was appreciated from the beginning of modern accounting. Lucas Pacioli, the author of the first published accounting treatise, gave specific instructions for the preparation of a summary, or "inventory,"¹ as he called it. Statements of assets and liabilities, however, are known to have existed as early as the fourteenth century. For example, the partners Francesco di Marco da Prata and Domenico di Cambio drew up a detailed statement of assets and liabilities on August 30, 1389, quite in the modern manner.² The statement was entered in a private book and signed by the partners, and the book was closed with a seal.

¹ *Summa de Arithmetica*, Section IX, Treatise XI, Chapters II and III. Venice 1494.

² Reproduced in detail in Enrico Bensa, *Francesco di Marco da Prata*, pages 414-417. Milan: Fratelli Treves, 1928.

In the sixteenth century the summary of the accounts was made an integral part of the ledger in the form of a balancing account. The balancing account is illustrated in Johann Gotheb's treatise.³ The balances of the asset and liability accounts were closed into this balancing account in a manner similar to the contemporary practice of closing the income and expense accounts into a summary account. This procedure "became standard book-keeping practice and was in use until quite recently."⁴

When business enterprises were operated on a small scale, the summary contained in the balancing account sufficed to show the result of operations and could readily be inspected by the proprietor or partners, consequently, there was no need for a statement to be made outside the books of account. However, such extracts from the books were occasionally prepared. In 1571 the Mines Royal, which was in financial difficulties because of a business depression, made a statement for its stockholders entitled "an Estimate of the Stock remaining at the Mines and the value thereof at Christmas last."⁵ This statement, however, was merely an enumeration of assets, and the liabilities were not listed.

As business enterprises assumed larger proportions during the latter part of the nineteenth century and corporations began to have many investors, it became necessary to make copies of accounting summaries for distribution to all stockholders, and so the balancing account was developed into the contemporary balance sheet. The financial statements used in modern accounting practice are a relatively recent addition to accounting procedure, and the forms used today were not fully developed until the end of the last century.

Statement Analysis Begun by Bankers

Until about the turn of the century a financial statement was regarded merely as a "proof" of the bookkeeper's work. At this time, however, bankers began to request balance sheets of appli-

³ *Buchhalten, Zwey Kunstliche unnd Verstandige Buchhalten*. Nurnberg 1546.

⁴ A. C. Littleton, *Accounting Evolution to 1900*, page 130. New York: American Institute Publishing Co., Inc., 1933. Littleton found the latest mention of a balancing account in E. G. Hall, *Business Manual* Logansport 1894.

⁵ *State Papers, Domestic, Elizabeth LXXXV 46, Calendar, 1547-1580*, page 436, cited "as a very early instance of a balance sheet of a joint-stock company" by W. R. Scott, *The Constitution and Finance of English, Scottish, and Irish Joint-Stock Companies to 1720*, Vol. II, pages 388-389. Cambridge: University Press, 1910.

cants for credit, for use as bases of opinions regarding the desirability of credit extension

The use of financial statements on a large scale for credit purposes may be said to date from February 9, 1895, when the Executive Council of the New York State Bankers' Association adopted a resolution to

recommend to the members of this Association that they request borrowers of money from their respective institutions to give them written statements over their signatures of their assets and liabilities, in such form as the Committee on Uniform Statements of the various groups recommend ⁶

From this time onward the subject was much discussed, and the use of statements for credit purposes was recommended by leading bankers, such as James G. Cannon, Vice-President of the Fourth National Bank of New York, who was one of the most vigorous sponsors of the movement. In one of his addresses⁷ he said.

credit extended to the merchant must be predicated upon his solvency. This being the case, it is essential to have at hand definite knowledge as to the financial responsibility of the applicant for credit, and this information can be secured from no better source than the applicant himself.

Mr. Cannon pointed out that for this purpose there had been devised the "property-statement blank," which provided such information as is "the only true basis for the extension of credit" and went on to say that such statements must be analyzed. But he gave no indication regarding what constituted analysis. However, since he submitted a form for comparison of statements, such comparison was undoubtedly part of the analysis. He also mentioned that the National Association of Credit Men had adopted uniform "property-statement blanks" which were being widely used.

Thus it is seen that in the 1890's bankers developed the notion that they might use financial statements as a basis for determining eligibility for credit. The strength of the movement in favor of such a procedure is shown by the literature of the day. In 1900 the New York State Bankers' Association published a standard

⁶ *Bankers' Magazine*, Vol. 50, pages 547-548.

⁷ Delivered before the American Bankers' Association, September, 1899. *Bankers' Magazine*, Vol. 50, pages 577-586.

form for application for credit which included space for a balance sheet.⁸ Apparently bankers began to request balance sheets of their clients, but it does not appear that any attempt was made at quantitative measurement of their contents. The balance sheets were probably merely scrutinized and then carefully filed away. Instructions by writers in regard to analytical procedure were vague.

Mr. Cannon's use of comparative statements seems to have gained momentum, for in 1906 one writer who used comparative statements had this to say: "The statements must be thoroughly analyzed by the credit manager by study and comparison; their weaknesses watched for and then strong points noted—he must understand them fully."⁹ The writer, however, gave no specific instructions as to what to compare.

Having accepted the idea of comparison, the bankers seem to have begun to think about what should be compared. A writer in 1908 stated: "Credit is usually extended on the strength of quick assets, and many good judges feel that the ratio of quick assets to liabilities should be about $2\frac{1}{2}$ to 1."¹⁰ It is thus evident that by 1908 quantitative measurement by means of ratios had been adopted by credit men.

Statement Analysis in the Investment Field

Meanwhile, the notion of forming an opinion of the financial condition of an enterprise from the analysis of its financial statements had taken root in the investment field, particularly in connection with railroad securities. A booklet entitled *The Anatomy of a Railroad Report*, which is regarded as a classic in railroad analysis, was published in 1900 by Thomas F. Woodlock. In its treatment of the various elements of railroad statements, this booklet foreshadowed modern analytical methods, for it discussed "the percentage of operating expenses to gross earnings," "the ratio of fixed charges to net income," and "the relative proportion which the funded debt and stock of a company should bear to the actual cost of the property." In regard to current position, Wood-

⁸ *Bankers' Magazine*, Vol. 60, pages 249-250.

⁹ Charles W. Reihl, "Credit Department of a Bank," *Bankers' Magazine*, Vol. 72, pages 408-417.

¹⁰ William M. Rosendale, "Credit Department Methods," *Bankers' Magazine*, Vol. 76, pages 183-194.

lock said "In general, current items on each side of the account should at least fairly offset each other, year by year."

Financial statement analysis as a basis for opinion regarding financial condition became more and more popular in the investment field, although most writers on investment were rather vague as to procedure. John Moody, in his book *The Art of Wall Street Investing*, which was published in 1906, said

Having familiarized oneself with the physical characteristics of a road the next step for the investor or student to take is to ascertain and then analyze the earning power of the property. This is done through an examination and analysis of the income or revenue account. Having familiarized oneself with the physical and earning power of a railroad property, the next step is to examine its financial side. This is taken up through the analysis of the company's balance sheet. Practically nothing can be known of a railroad's financial condition unless the financial statement or balance sheet is carefully examined and dissected.

Lawrence Chamberlain, in his *The Principles of Bond Investment*, first published in 1911, used Woodlock's ratio of operating expenses to gross earnings, calling it the "operating ratio." He also used the ratio of transportation expenses to operating revenues, which he called the "transportation ratio," and the ratio of margin of profit to total net income, known as the "factor of safety." In addition, he showed the relation of various components of an item to the whole, such as the proportion of various revenues to total operating revenues and the proportion of various expenses to total operating expenses, a device which has since been called the "common-size" or "100%" statement.

Progress of Credit Analysis to 1914

With reference to the growth of the practice of submitting balance sheets for credit purposes the following was written in 1906

Ten years ago few banks required borrowers to sign a statement of their affairs. Today the custom is quite general among bankers, but even yet there are some banks which have not adopted the practice.

It is worthy of remark, moreover, that there is a decreasing reluctance among borrowers to give these statements.¹¹

¹¹ William Post, "Analysis of Borrowers' Statements," *The Journal of Accountancy*, Vol. 1, January, 1906, pages 181-193.

The writer then discussed the various items to be found in a balance sheet and suggested that the banker make a scrutiny of an applicant's balance sheet to determine his financial condition, supplementing this examination by an investigation of contingent liabilities and "business and results," by which he meant sales, gross profits, expenses, and net profits.

In the foregoing is the nucleus of the modern idea. However, this writer's statements are rather optimistic, for it is not probable that the custom of requiring statements had become as general as he would have his readers believe. This is borne out by the fact that a decade later a special committee appointed by the Federal Reserve Board stated:

We believe that the country banks which constitute the majority of our members are generally without credit files as known to the large city bank. Borrowers are personally known by the officers and directors who are usually then neighbors, and the means, business and character of such borrowers are matters of intimate personal knowledge to the bank officer.¹²

However, those bankers who maintained credit files gradually developed the notion of comparing various items in successive statements, comparison of current assets and current liabilities usually being considered the most important.

Although among bank credit men the current ratio seems gradually to have become the main feature of statement measurement, by 1913 there appeared signs of revolt against the supremacy of this ratio as a criterion. A writer of that year reflected the opinion that other things need to be considered in addition to the current ratio, for he asked:

Is the cash in bank in reasonable proportion to liabilities year after year? Are the bills and accounts receivable excessive when considered in the light of the seasons and trade terms of the business? Business conditions allowed for, does the proportion of goods on hand to annual sales indicate careful merchandising and an annual cleaning out of dead stock, or is the merchant or manufacturer disinclined to take a small present loss on unsuccessful lines in exchange for an opportunity to get his capital and endeavors into more profitable business?¹³

¹² H. P. Willis, *The Federal Reserve System*, page 914. New York: The Ronald Press Co., 1923.

¹³ F. B. Snyder, "Credit Service," *Bankers' Magazine*, Vol. 86, pages 555-563.

Effect of the Federal Reserve Act

The establishment of the Federal Reserve System in 1914 had a stimulating effect on the use of financial statements. The Federal Reserve Act provided¹⁴ that member banks might rediscount with the Federal Reserve Banks

notes, drafts, and bills of exchange arising out of actual commercial transactions, the Federal Reserve Board to have the right to determine or define the character of the paper thus eligible for discount

The Board proceeded to "determine or define the character of the paper thus eligible for discount" and placed the burden of investigating credit standing on the banks, requiring them to maintain a credit file of the financial statements of all clients whose paper they rediscounted and also requiring that

after January 15, 1915, no paper shall be discounted or purchased by Federal reserve banks that does not bear on its face the evidence that it is eligible for rediscount and that the seller of the paper has given a statement to the member bank. A rubber stamp is considered sufficient evidence to that effect at this time.¹⁵

These regulations of the Federal Reserve Board obviously brought to the fore the use of financial statements as a basis for the granting of credit. Bankers and accountants began to give much attention to the subject of both the construction and the analysis of financial statements, but, while most of the articles of the time in banking and accounting journals discussed the form and content of financial statements, with special reference to statements prepared for bankers,¹⁶ little progress was made in analytical technique

¹⁴ Section 13

¹⁵ Federal Reserve Board, Circular No. 13, November 10, 1914, reprinted in Willis, *op cit*, pages 930-934

¹⁶ See, for example, J. E. Masters, "Financial Statements as a Basis of Credit," *The Journal of Accountancy*, May, 1915, pages 334-343; C. A. Peple, "Statements of Borrowers from the Viewpoint of the Federal Reserve Bank," *The Journal of Accountancy*, June, 1916, pages 410-423; P. Havener, "Analysis of Financial Statements," *The Journal of Accountancy*, May, 1917, pages 349-353; and R. H. Leamy, "Essential Features in a Report for Credit Purposes," *The Journal of Accountancy*, September, 1918, pages 161-168

Development of Ratio Analysis

The presentation of an elaborate system of ratio analysis was made in 1919 by Alexander Wall, who published an article¹⁷ in which he criticized the bankers who based decisions in regard to granting of credit on current ratios alone. Wall pointed out that, in order to get a complete picture, it is necessary to consider relationships in financial statements other than that of current assets to current liabilities. The relationships that he described might be measured quantitatively and used as checks on the current ratio. Wall became one of the foremost proponents of ratio analysis and elaborated his methods in several volumes.¹⁸

Analysis by means of the calculation of a series of ratios rapidly became the popular method of the rank and file of writers on analysis of financial statements. Unfortunately the importance of ratios was greatly exaggerated, they were represented as clothed with mysterious powers and as infallible keys to business success. Many who had too little understanding of their significance began to use them in unwarranted ways. Later writers, however, have sought to clarify the use of ratios and have stressed their limitations.¹⁹

Introduction of Trend Percentages

No serious criticism of ratio analysis appeared in print until 1925, when Stephen Gilman offered the following four objections.²⁰ (1) A change in a ratio can be interpreted only in the light of the changes in each of the two variables the relationship of which it represents, (2) it is difficult to comprehend the connection of the

¹⁷ "Study of Credit Barometers," *Federal Reserve Bulletin*, March, 1919, Vol. V, pages 229-243.

¹⁸ *Analytical Credits* Indianapolis: The Bobbs-Merrill Co., 1921. *Ratio Analysis of Financial Statements* (with Raymond W. Duning) New York: Harper & Bros., 1928. *Analyzing Financial Statements* (with Raymond W. Duning) New York: American Institute of Banking, 1930. *How to Evaluate Financial Statements* New York: Harper & Bros., 1936.

¹⁹ See W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*, page 142. American Accounting Association, 1940. N. Loyall McLaren, *Annual Reports to Stockholders* New York: The Ronald Press Co., 1947, pages 282-283, and William A. Paton and Robert L. Dixon, *Essentials of Accounting*, page 757. New York: The Macmillan Co., 1958.

²⁰ Stephen Gilman, *Analyzing Financial Statements* New York: The Ronald Press Co., 1925, rev. ed. 1934.

ratio with the balance sheet from which it was computed, (3) the ratios give an unwarranted impression of finality, and (4) the ratios do not give a comprehensive view of the balance sheet relationships. Gilman proposed as a substitute for the ratio technique one in which the analyst divides the magnitudes of significant items or groups of items in each of a series of statements by their magnitudes in one year in the series selected as the base, thus obtaining a series of trend percentages or relatives to the base year. By studying the variations from the base year, he contended, a comprehensive view of the progress of the business can be obtained.

Standard Ratios

Having adopted the method of computing the ratios of various entities in the statements to one another, analysts felt the need for standards similar to the standard costs used in cost accounting which might be used as an aid in deciding whether the ratios in a particular enterprise are satisfactory or not. In 1923, the preface to a book by James H. Bliss stated that "in every branch of industry there are certain characteristic financial and operating ratios, depending upon the nature of its activities." Such ratios, Bliss said, might be determined by averaging the ratios of the concerns in the industry and that to "enjoy the average measure of success" a concern must approximate these ratios.²¹

The notion that standards of reference could be obtained by averaging the ratios of enterprises in the various industries was received with enthusiasm in certain quarters. It soon, however, became evident to those who understood the nature of the financial statements that it was not feasible to obtain reliable standards in the manner suggested, and, as a result, the idea was discredited although from time to time some writers have revived it. This subject will be discussed in Chapter 14.

Financial Statement Analysis Today

The foregoing outline of the history of the growth of financial statement analysis technique shows that it has been developing

²¹ James H. Bliss, *Financial and Operating Ratios in Management*. New York: The Ronald Press Co., 1923.

Over a period of more than sixty years. From the crude beginnings of rough comparison of statements at the turn of the century a fairly definite procedure, employing measuring devices akin to those used in scientific work, has gradually evolved. The exposition of these measuring devices and their use as an aid in the interpretation of financial statements is one of the objects of the present volume.

The measurements used in financial statement analysis may be classified into two groups: (1) those which measure the relationships among the items in a single set of statements, (2) those which measure the changes in these items in successive statements. The first is a static analysis, measuring position at a point of time or for a period, the second is a dynamic analysis, measuring change of position. Both types of analysis are necessary for a comprehensive interpretation, for it is important to know not only the proportions as of a certain date but also the trends in the enterprise.

The information yielded by the analysis of financial statements is used in credit extension and investment commitment. It is also of importance in management. A business executive needs every possible type of data about the enterprise he is directing, and the information derived from an analysis of the financial statements is essential in the solution of managerial problems.

* **Internal and External Analysis**

Analysis of a business may be conducted internally or externally. In internal analysis the analyst is within the enterprise; he is analyzing, he has access to the books of account, and complete information about the business is at his disposal. In external analysis he is not connected with the enterprise, and the only data available to him are the statements and such information as the business is willing to submit. Analysis for credit extension and investment commitment is of the external type, whereas analysis for managerial purposes is of the internal type. Because he is better informed, the internal analyst can usually do more satisfactory work than the external analyst.

In the present volume no attempt has been made to draw a definite line of demarcation between internal and external analysis. The scope of the information available to the external analyst

has in recent times gradually become greater. Credit men now obtain such data as income statements and agings of accounts, which were not available in the past, and investment analysts may secure from the Securities and Exchange Commission various schedules to which they did not have access before the creation of the Commission. The distinction between internal and external analysis is now less definite than formerly.

The Nature and Limitations of the Financial Statements

In order to interpret the financial statement data, it is essential to have a thorough understanding of their nature and an appreciation of the limitations of the statements. Such understanding and appreciation are hardly possible without a knowledge of not only the processes by which the statements are produced but also the underlying concepts employed by accountants in the performance of their work.

The Income Statement

The determination of the net income of a business enterprise for a certain period of time is the central feature of accounting. Business is primarily conducted for the purpose of earning income, and, therefore, the net income is the most significant figure produced by the accounting processes, for it measures the degree of attainment of the objective.

The income statement provides a review of the factors directly concerned with the determination of the net income: the *revenue* realized from the sale of goods or services and the *costs* incurred in the process of producing the revenue. These costs are the cost of sales and the selling, general, and administrative expenses. They are deducted from the revenue to determine the income from regular operations. In addition, there may be income from other sources and other deductions from income.

✓ Revenue

Revenue may be defined as the sum of money received or to be received from the customers or clients of the business as a result of the sale to them of goods or services, or both. For purposes of accounting, revenue is usually considered as having been realized when a sale has been consummated and the invoice prepared and recorded in the accounting records.

It is important to distinguish between the *realization* and the *earning* of revenue. Revenue is earned during the entire process of activity leading to the sale, such as procurement, production, and service performance. It is, however, not feasible to attempt to accrue income on the basis of earnings, except, for example, in such activities as those under contract for a substantial fee. Hence the recognition of revenue when a sale has taken place for which cash or an account or note receivable has been acquired.

The determination of the revenue is a much simpler matter than the determination of the costs to be deducted therefrom, since it is more or less the balance of the revenue account or accounts.

✓ Costs

Business costs may be divided into three categories:

- (1) the cost of the property, plant, and equipment,
- (2) the cost of what is to be sold
 - (a) in a merchandising business, the cost of the merchandise purchased for resale,
 - (b) in a manufacturing business, the cost of the materials, labor, and overhead incurred to produce the products to be sold,
 - (c) in a service business, the costs incurred in order to perform the service to be rendered, and
- (3) the cost of the selling, general, and administrative activities.

Costs are incurred for the purpose of earning revenue and they are assigned to, that is, deducted from, the revenue they were instrumental in earning. Accordingly, it is the function of the accountant at the end of each accounting period to determine the

amount of each kind of cost that should be deducted from the revenue of that period

The costs assigned to a period are regarded as having *expired* and are designated as *expenses*. The *unexpired* costs, that is, those regarded as applicable to a future period, are designated as *assets* because the future period will benefit from their incurrence. Thus, *an expense may be defined as an expired cost*.

The assigning of costs to revenue is sometimes referred to as *matching costs with revenue*, since the accountant places together related costs and revenue.

Disposition of Costs

The three categories of costs outlined above are disposed of in the accounting records in the following manner:

(1) That portion of the cost of the property, plant, and equipment applicable to a specific period (expired) is designated as *depreciation, depletion, or amortization*, as the case may be, and is reclassified in expense accounts. The unexpired portion of the cost remains as balances in asset accounts.

(2) That portion of the cost of what was acquired or produced for sale and which has been sold (expired) is designated as *cost of goods sold*, also called *cost of sales* (an expense). In a service business, the cost of the service performed is treated in a similar manner. The cost of the unsold portion of the merchandise of a merchandising business (unexpired) and the materials and finished goods on hand in a manufacturing business, as well as any work in process of production, constitute the inventories (assets). In a service business, the unexpired portion of the service cost is treated as a *prepaid expense* (asset).

(3) That portion of the cost of the selling, general, and administrative activities considered applicable to a specific period (expired) is designated as *selling, general, and administrative expense*, or classified in subdivisions thereof. The costs not considered applicable to the period (unexpired) are designated as *prepaid expenses or deferred charges* (assets).

In order to simplify the above description of the assignment of costs to revenue, no mention was made of the possible adjustments for accrued and deferred revenue and accrued expenses.

Nor were expired costs subdivided into *utilized costs* and *lost costs*, the utilized costs being those that resulted in providing revenue and which are therefore matched with it, while the lost costs are those that did not produce revenue and which are allocated as *other deductions from income* in the period of occurrence, such as, for instance, the loss on sale of fixed assets. Also, no mention was made of the process of cost transformation, as when material, labor, and overhead costs are converted into the cost of finished goods.

Because the estimate of what portion of a given expenditure is to be considered an expense and how much is to be carried forward in the books and statements as an asset will affect the stated amount of the net income as well as the stated amount of the assets and the capital, the assignment of costs to revenue may well be considered the most critical step in the accounting processes and, therefore, the central problem of accounting. This phase of accounting offers the greatest challenge to the accountant's ability.

The Balance Sheet

It follows from the foregoing that the assets listed in a balance sheet are *deferred* or *unamortized costs*, with the exception of cash and claims to cash, such as receivables and investments in securities. In the course of time, almost all of the deferred costs will be assigned to revenue. Thus, from the accounting point of view, *assets are largely cost residue to be assigned to revenue in the future*.

The liabilities are the sums owing to creditors and consist mainly of notes and accounts payable, accrued expenses, and long-term debt. The estimated liabilities (liability reserves) are estimates of certain sums of money that the business will have to pay in the future, or the dollar amount of losses it is expected will be sustained, in which case they are really estimated *contras* to the assets.

The capital is the equity or interest of the owner or owners in the business. It is equal to the stated amount of the assets after deduction of the liabilities.

Nature of the Financial Statement Data

The financial statements are composed of data which are the result of a combination of (1) recorded facts concerning business transactions, (2) conventions adopted to facilitate the accounting technique, (3) postulates, or assumptions, made to implement the conventional procedures, and (4) personal judgments used in the application of the conventions and postulates

1 Recorded facts The recorded facts in the statements are such data as the amount of the cash on hand and in bank, the face amount of the notes receivable which the business has on file, the amounts owing on account from customers and other debtors, the cost of supplies and fixed assets, the amounts owing to creditors in the form both of notes and of accounts, the total sales during the period, and so forth. The listing of these items is on the basis of the historical records of transactions which occurred in the past, and the amounts at which they are stated are in terms of the prices at which the transactions took place.

2 Conventions. In a reasonably active business, the stream of transactions is continuous from day to day and from year to year. But in order to supply the management and others interested in the business with information regarding the success of operations and the status of the investment, the accountant makes the assumption that the continuity is broken at a certain moment of time, such as at the close of business on December 31. This assumption, which is contrary to the factual record, gives rise to the problems of matching costs and revenue which have been discussed.

In order to facilitate this process of breaking the record into time segments and allocating revenue and costs to them in income statements and showing the cost residuum in balance sheets, a series of conventional procedures have been devised.

The allocation is effected in some instances in a very simple way. For example, the portion of the amount expended for postage stamps which is to be considered an asset is determined by an inventory of the stamps on hand measured at face value. The difference between the total recorded expenditure for stamps and the inventory constitutes the postage expense for the period.

With respect to such items as stationery on hand, the ques-

tion arises as to whether they should be stated at cost or at the market price at the date of closing the books, if market price differs from cost. The conventional rule is that such items shall be stated at cost.

In the case of the inventory of merchandise, convention provides various methods, from among which the accountant may make a selection to suit the requirements of the business. Among these methods are found (1) at the lower of cost or market (the most commonly used method), (2) at cost, (3) at less than the lower of cost or market, (4) at market, and other methods.

The fixed assets, such as plant and equipment, present a more difficult problem. These assets, accountants have agreed, should not be measured by a periodic appraisal, since, particularly in large-scale enterprises, the task would be too great and the conclusions would be doubtful, owing to changes in prices and in the psychological attitude of the appraiser. Accordingly, certain conventional methods for making the allocation between asset and expense have also been devised for this type of asset. These are the depreciation methods, with which all versed in accounting are familiar. The amount of the allocated depreciation is an expense and is deducted from revenue, the net stated amount or *book value* of the asset to which it applies being reduced by the same amount in the balance sheet.

The measurement of receivables is also effected by a conventional method similar to that used in the measurement of fixed assets. The accountant estimates the probable loss due to uncollectible accounts and notes, deducts this amount from the total receivables in the balance sheet, and reduces income accordingly.

§ *Postulates* Accountants make various assumptions that implement the conventions they have adopted. One of these assumptions is to the effect that the enterprise for which the accounting is performed will continue in business. This assumption is unavoidable, since the only alternative would be to assume that the enterprise is to be liquidated, which is untenable if the management has shown no intention to liquidate. The assets are thus stated on what is known as the *going-concern basis*. This assumption is usually referred to as the *permanency postulate*.

The going-concern basis is that of cost less any accumulated depreciation. On the liquidation basis, the accountant would have to depart from the cost basis and state the assets at what they

would realize if sold. The sums that could be realized in liquidation would usually be less than the book value, and some assets, such as organization expense, would have no realizable value.

Another postulate, known as the *monetary postulate*, is the tacit assumption, contrary to fact, that the value of money, that is, its purchasing power, is constant. The accountant records all transactions in terms of their dollar amounts and makes no distinction among those of various years. For example, one asset may have been acquired in 1939, another in 1949, and still another in 1959, and, although the purchasing power of the dollar was different in each of these years, the accountant does not distinguish among the recorded dollars of cost but adds them together to reach a total.

With respect to the determination of revenue, there is a postulate to the effect that the entire revenue from a sale is earned at the moment the sale takes place, even though a considerable amount of time may have been required to produce the item sold (as explained on page 16). This is an assumption made for convenience, although it would seem more logical to accrue the income during production. This assumption is known as the *realization postulate*.

Thus, the dollar amounts of assets in the balance sheet and the amount of net income or loss in the income statement are produced by certain conventional methods, implemented by various postulates, which accountants in the course of time have developed. These stated dollar amounts do not provide precise measurement of the financial statement items and do not necessarily bear any relation to the market value of the assets of the business or the price at which they could be replaced.

✓4. *Personal judgments* Although the procedure for stating how much of a particular expenditure is to be assigned to revenue and how much is to be carried forward as an asset is governed by established conventions and postulates which have become standard accounting practice, the application of these conventions and postulates depends on the personal judgment of the accountant. For example, in applying the "cost or market, whichever is lower" rule to the measurement of the inventory, the accountant will have to use his judgment in selecting the most satisfactory method of computing the "cost" in a particular case. There are various methods: (1) first-in, first-out, (2) last-in, first-out, (3) average

cost, (4) standard cost, (5) base stock, and so forth. The use of each of these methods would result in a cost of goods sold in the income statement and an inventory in the balance sheet different from the result by any of the other methods. Also, there are different procedures with respect to such items as cash discounts on materials purchased, which may be treated as a reduction in the cost of the materials or as a form of income.

The procedure of allowing for bad debts depends entirely on judgment, based perhaps on past experience. Judgment must also be exercised in the selection of the method to be used in the depreciation of fixed assets. Let it be supposed, for example, that the depreciation of a machine is to be recorded. The accountant might select the straight-line method, the fixed percentage of diminishing value method, the method by which depreciation is based on the output of the product or the number of hours of operation, or perhaps the recently accepted sum-of-the-years'-digits method. All methods have as their objective the apportionment of the cost of the asset against revenue and, thus, the writing off of the asset on the books when its useful life has ended, but the various methods use different routes to this objective.

The rate of depreciation to be used is also on a conventional basis, to a large extent predetermined by income tax regulations, but judgment is required in the matter of classifying the various assets into proper categories. This is, to be sure, an engineering rather than an accounting problem, but it nevertheless depends on judgment. The engineer's judgment as to the classification of the asset, coupled with the accountant's judgment as to the method of apportioning the depreciation expense over the life of the asset, materially affects the stated net dollar amount of the asset as of a balance sheet date and the amount of net income of a business for a fiscal period.

Whether a certain expenditure is a capital or a revenue expenditure must also be decided. The distinction accepted by accountants is that expenditures for the purpose of improving an asset or materially increasing its usefulness are to be considered capital expenditures and thus debited to the asset account. On the other hand, expenditures made for the purpose of keeping the asset in proper condition, that is, repairing and maintaining it, are to be treated as deductions from revenue in the period in which they are incurred. The rule, like the "cost or market, whichever

is lower" rule, seems quite simple, but, like the latter, it is not so simple of application. It would usually be clear that in a small business an expenditure of \$5,000 on its building is a capital expenditure and that a payment of \$5 is a revenue expenditure. However, a vast intermediate area exists in which the accountant must exercise his judgment, and his decision, one way or the other, affects the dollar amount of the asset in the balance sheet and the amount of net income for the fiscal period.

Consistency in Accounting Procedure

Because of the use of judgment and also because the principles of accounting permit the accountant in performing his work to select procedures from among various alternatives, each of which would produce different results in the income statement and the balance sheet, the statements might be regarded as unreliable.

The statements for a certain year are affected to a considerable extent by the judgment and the procedural choices of the accountant. Opinions and procedures other than those employed might cause the statement data to differ materially. However, it should be borne in mind that the judgment of the accountant is not arbitrary but an informed and prudent professional judgment. Also, the rules of accounting require that, having made a selection of procedures, the accountant must consistently follow them in successive periods. This requirement produces statements that are comparable from year to year.

All revenue and costs must eventually be allocated to accounting periods, and, since the differences in procedures and opinions are merely differences with respect to allocation to periods, the same over-all result will be observed if statements for a sufficient number of periods are employed. In this way, what would appear to be a serious problem is obviated. Later chapters of this book will demonstrate this fact.

In recognition of the foregoing, the standard form of audit report used by certified public accountants states that the generally accepted accounting principles with which the accountant has done his work have been applied on a basis consistent with that of the preceding year. If a change in procedure should be made, the accountant is required to describe it in his report and to state the difference caused by the change. An illustration of

this is afforded by the switch in inventory procedure from FIFO to LIFO made by many businesses some years ago.

Generally Accepted Accounting Principles

The certified public accountant is required to do his work in accordance with "generally accepted accounting principles" and to state that he has done so in his report. This phrase has reference to such principles as are more or less closely adhered to by the best accounting practice. These principles are, like the British Constitution, not embodied in any one code or authoritative book of regulations, but all persons trained in accounting are familiar with them. They consist of such principles as, for example, that unrealized profits should not be included in earnings and that expenses incurred but unpaid should be included among the liabilities. However, there exist differences of opinion in the profession with respect to various phases of accounting procedure. This is to be expected because of the complex nature of the work, which requires judgment and thus is difficult of performance according to rigid rules and regulations.

In order to develop a higher degree of uniformity in accounting procedure, a considerable number of accountants have in recent years devoted themselves to the work of clarifying and, to a certain extent, of standardizing the principles of good accounting practice, and considerable progress has been made.¹

Financial Position

In the standard form of audit report, the certified public accountant further states that in his opinion the statements "present fairly the financial position" of the enterprise. In times past the word *condition* was used, but this has been superseded by the

¹ This is well represented by

T. H. Sanders, H. R. Hatfield, and U. A. Moore, *A Statement of Accounting Principles*. New York: American Institute of Certified Public Accountants, 1938.

W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards*. American Accounting Association, 1940.

American Accounting Association, *Accounting and Reporting Standards for Corporate Financial Statements*, 4th ed., 1957.

A. C. Littleton, *Structure of Accounting Theory*. American Accounting Association, 1953.

American Institute of Certified Public Accountants, *Accounting Research Bulletins*. Issued by the Committee on Accounting Procedure 1939 to date.

word *position* The word *condition* gives the impression that the statements show all pertinent facts with respect to the relation of the enterprise to the business world But this is not so The data contained in the statements are limited to what is contained in the accounts

There are innumerable factors that have a bearing on the financial condition of a business but which are not usually reflected in the accounts Some of them are not measurable in terms of money Among these are the contingent assets and contingent liabilities The contingent assets are usually dependent on some future event They include claims for infringement of patent rights or breach of contract, claims for tax refunds, judgments which may be awarded, and assets which have been written off but which have some prospect of becoming valuable. Contingent liabilities exist in connection with commercial paper, guarantees, warranties, purchase and construction commitments, prior-year taxes, lawsuits pending against the enterprise, and subsidiary indebtedness

Also, there are many additional factors, such as unfilled orders of customers, technical problems in an industry, market conditions, taxation and tariff problems, the public's demand for commodities, and the ability of the management These are quite unmeasurable but still have an important bearing on the condition of a business

In recognition of the foregoing, it has become customary to give information regarding such matters in notes appended to the financial statements The importance of these notes is usually emphasized by calling attention to the fact that they should be considered an integral part of the statements

Limitations of the Financial Statements

The discussion of the nature of the financial statements develops, as a corollary, an appreciation of their limitations Four important facts with respect to the limitations of the statements are

(1) Precision of the financial statement data is impossible, because the statements deal with matters that cannot be stated precisely. The data are produced by conventional procedures developed by the accounting profession through many years of ex-

perience, implemented by various postulates or assumptions, and applied by judgment

(2) The statements do not show the financial condition of a business, since there are usually many factors which are not part of the financial statement data that have an important bearing on financial condition. Rather, the statements show the position of the financial accounting for a business.

(3) The assets shown in a balance sheet are largely unexpired or unamortized costs. The balance sheet does not usually show the market value of assets. From this it follows that the balance sheet does not show what a business is worth, that is, what might be obtained for it if it were sold.

(4) The net income shown in the income statement is not absolute but relative, dependent as it is on the particular conventional procedures used in its accounting by the enterprise for which the statement is compiled, these procedures having been selected from among various alternatives.

A Common Fallacy

The need for an understanding of the nature and limitations of the financial statements becomes apparent when it is observed that those unfamiliar with accounting are quite naturally inclined to assume that a balance sheet is a factual statement showing what the assets are worth and, so, the worth of the business as a whole after the deduction of the liabilities. This opinion has undoubtedly been encouraged in the past by descriptions of the balance sheet given in elementary textbooks on accounting to the effect that it is an instantaneous picture of a business at a certain moment, as at the close of business on December 31 of a given year.

The fallacy in regard to the dollar amounts shown in the balance sheet similarly attaches to the income statement in the form of a belief that this statement provides an absolute measure of earnings. Such an impression is heightened by the fact that the figures have the appearance, when they are carried out to the cent, of providing a precise measure of earnings. However, those who are versed in accounting know that the income statement is not a precise statement of earnings and that the appearance of precision in carrying figures out to the cent is merely a result of the requirements of double-entry bookkeeping.

Accounting and Mathematics

Upon looking at the financial statements and observing that they contain many numbers, those untrained in accounting naturally associate it with mathematics. Mathematics is the most precise of all the sciences, in fact, it is the ideal science in that it deals, for instance, with such matters as lines that have no width and points without dimensions. Accounting, in contrast to this, since it operates on a series of conventions and postulates applied by the exercise of judgment, as has been shown, arrives at conclusions which are largely opinions rather than facts. The unfortunate ascribing of the attributes of mathematics to accounting is the cause of many of the mistaken notions about accounting.

False Financial Statements

No definite method exists whereby the analyst may discover false figures in a financial statement, except that in cases where the amounts shown are unreasonable, his suspicions may be aroused. The best safeguard against fraudulent statements is the opinion of an independent certified public accountant, but even this will not completely eliminate the possibility of fraudulent figures. The public accountant's responsibility is to exercise the customary degree of care and skill of a member of his profession. He is not a detective, and, when there is nothing to arouse his suspicions, he is not expected to suspect fraud. It should also be remembered that the auditor does not state that the statements are absolutely correct, but that in his opinion they fairly present the position of the client. It is interesting to note that it was held in a New York case that, although a firm suffered loss through a trusted employee's fraud concealed by falsification of the books, it was not entitled to recover from the auditor, because of its negligence in not properly supervising its employee.²

The best protection against fraudulent statements is probably the law.³ In most states it is a crime to obtain property on a false financial statement, while in others it is a crime to issue a

² Craig et al. v. Anyon et al., 212 App. Div. 55.

³ For a detailed discussion see A. E. Fixel, *False Financial Statements*, 2nd ed. Albany, N. Y.: Matthew Bender & Co. Inc., 1934.

false statement. In some states the matter comes under a "false pretense" statute. Under these various statutes it usually must be established (1) that the accused represented good financial standing in order to obtain credit, (2) that the representation was materially false, (3) that the maker of the statement had fraudulent and/or felonious intent, (4) that the creditor relied on the statement, and (5) that the said creditor suffered loss by such reliance.

Cases have been prosecuted under the Federal statute against the use of the mails to defraud.⁴ To obtain an indictment under this statute, it must be shown that the financial statement was placed in a post office or postbox to be sent through the mails, and also that a scheme to obtain money or property by false representations existed. In order to insure protection under the Federal statute, the National Association of Credit Men has devised a form for financial statements which when folded becomes an envelope, so that the evidence in regard to the use of the mails appears directly on the statement.

⁴ *U. S. Criminal Code*, Section 215, *U. S. Revised Statutes*, Section 5480.

Measurement and Interpretation

Measurement in Accounting

In most fields of human activity there is need for a standard of quantitative measurement. There are measures of distance, time, energy, size, quantity, weight, and so forth. Without such measures it would be impossible to make estimates and comparisons. In accounting, the unit of measure is the monetary unit of the country in which the accounting is performed—in the United States, the dollar.

Some of the records used by the accountant, such as inventories, contain data in terms of pounds, quarts, feet, cubic centimeters, square yards, reams, or cords, but these measurements are translated, for the purposes of accounting, into dollar measurements by the application of prices. The formal entries for transactions in the books, which are subsequently reflected in the financial statements, are thus in terms of monetary units.

The balance sheet purports to measure the assets, the liabilities, and the capital as of a certain date and the income statement, the net income for a certain period of time. These measurements, it must be understood, are on conventional bases. The balance sheet items are to a large extent historical records of prices at which transactions have taken place in the past, the income statement items are the result of the process of revenue and cost allocation. The earnings measurement is usually more useful as a basis for an opinion about a business than the measurement of the proprietary equity, particularly because of the difficulty of asset measurement.

In times past, statement analysis concerned itself largely with the balance sheet, undoubtedly because income statements were

not readily available in the business world. The income statement was regarded as a supplement to the balance sheet, providing information with respect to the causes of the changes in capital between successive balance-sheet dates. However, in more recent times income statements have become regularly available in both the investment and the credit fields, and, in appreciation of its importance, emphasis has veered from the balance sheet to the income statement. Because it is now regarded as the primary function of accounting to account for performance in terms of net income rather than to measure the status of the investment, balance sheets are looked upon as complementary statements creating a link between successive income statements.

Value

The uninformed naturally assume that the stated amounts of the assets are then "values." This has been the cause of considerable misunderstanding with respect to the balance sheet in the past. The word *value* as used in common parlance with respect to a certain object usually has reference to the market price of that object, that is, the number of dollars that could be obtained for it in exchange for money. In fact, one of the functions of money is that of acting as a measure of value.

The Committee on Terminology of the American Institute of Certified Public Accountants has given the following definition of *value* for accounting purposes¹

Value As used in accounts signifies the amount at which an item is stated, in accordance with the accounting rules or principles relating to that item. Generally book or balance-sheet values (using the word "value" in this sense) represent cost to the accounting unit or some modification thereof, but sometimes they are determined in other ways, as for instance on the basis of market values or cost of replacement, in which cases the basis should be indicated in financial statements.

Thus the accounting *value* of an item may be defined as a measurement, in terms of dollar units, in accordance with the rules of accounting applicable to the item measured.

The problem of measurement in terms of money is a leading one in economics as well as in accounting. When in 1776 Adam Smith wrote *The Wealth of Nations*, he made a distinction between

¹ *Accounting Research Bulletin No. 9*, page 85

"value in use" and "value in exchange"—that is, between the value of an object to its owner using it and its value in the market. The fixed assets provide an illustration of the first kind of value. These assets are used in the business and are stated by the accountant at their cost less depreciation to date, the difference being their "going-concern value" to the business. The merchandise inventory affords an illustration of "value in exchange," for the accountant commonly states the inventory with reference to prevailing market prices.

Many bases for the valuation of property are used in modern business—in fact, many more than Adam Smith conceived of. A building owned by a business may, for example, have many different "values": an accounting or "going-concern" or "book" value, an assessed value for tax purposes, a market value in the real estate market, a "replacement" value or cost of reproduction, and, if it is owned by a public utility company, a value for rate-making purposes. Each of these values might be different from the others.

Thus, the measurement of a given asset in terms of money will depend on the purpose of the measurement, so that, if the word *value* is used, it should be qualified by an adjective to indicate the purpose of the valuation. Accordingly, there is a "book value," a "market value," a "replacement value," an "assessed value," and so forth. There is no such thing as absolute value.

Valuation

The word *valuation* is used in accounting to indicate the act of assigning dollar amounts to the various items of the balance sheet. Because the use of this word is apt to be confused with *appraisement*, many accountants prefer to use the term *measurement*, as in the foregoing discussion. It should be borne in mind that it is not the function of the accountant as such to appraise property.

Measurement in the Social Sciences

Let it be supposed that a man having experienced a pain goes to Dr. Smith for an examination, and, as a result of his diagnosis, the doctor recommends an immediate operation. Further, let it

be assumed that the man, not satisfied with one diagnosis, consults Dr Jones, who advises medication rather than an operation. Should either Dr Smith or Dr Jones be considered incompetent? Not at all. Each has exercised his professional judgment, and the fact that each has given different advice does not disturb one, because medicine is a field in which an absolute decision is often not possible.

Turning to law, let it be supposed that a case is argued in court and that the decision is in favor of the plaintiff. The defendant takes the case to a higher court and the decision is reversed. And perhaps the case may finally reach the Supreme Court of the United States and five of the justices are of one opinion and four of another. Does one consider this strange? No. Law is a field in which the decision must rest on the exercise of professional judgment.

As with medicine and law, so it is with accounting. The conclusions of accounting are the professional opinions of the accountant. Thus the accounting processes are akin to those of medicine and law rather than to those of physics and chemistry, in which fields measurements may be made with a high degree of precision. Measurement is difficult not only in accounting, medicine, and law, but also in economics and all of the so-called social sciences.

Measurement in Economics

In the writings of economists one finds analyses of economic problems conducted in terms of (1) money, (2) commodities, (3) psychic reactions, and (4) welfare. The subject of wages might be taken as an example. Sometimes wages are discussed in terms of the number of dollars per day, or week, or month received by the worker. The mere statement of the number of dollars earned is a rather superficial treatment of the problem, however, for the worker is not interested in hoarding the dollars he receives, he works to get dollars so that he will be able to obtain commodities. Therefore, economists who want to get a more accurate picture of the worker's earnings attempt to go deeper and, by studying the purchasing power of the dollars received, interpret his earnings in terms of purchasing power, which the economist calls "real wages."

Many economists have sought to go still deeper into the mat-

ter The workman wants commodities, not for their own sake, but for the psychic satisfactions they bestow. A more fundamental analysis can be made by a study of the pleasures or satisfactions which the worker derives from the commodities he purchases with the dollars he earns. The desire to obtain satisfactions from the consumption of commodities is one of the strongest forces underlying economic behavior. Some economists have gone deeper still and discussed the problem from the broad point of view of the community as a whole in terms of welfare, considering welfare as the ultimate goal of all economic activity.

It is usually not feasible to measure directly the forces underlying economic behavior. That is why the work of those economists who have tried to analyze the "real forces" of economic behavior in the form of psychic reactions or of welfare appears to scholars today as unscientific. When economists carry on their discussions in these terms, they have no satisfactory basis for measurement. The money level and commodities level of analysis appear to be the only ones on which measurement is feasible, although it would be preferable to go beneath these superficial levels if that were practicable.

The Dollar a Poor Unit of Measurement

Accounting does not concern itself with social welfare or with psychic reactions; it uses units of commodities only in a secondary role. It knows but one common denominator—in the United States, dollars and cents. The dollar, however, is an extremely poor unit of measurement because its value or purchasing power is continually changing. The problem is similar to the economist's problem of wages: the nominal income of a business enterprise is no more indicative of its "real" earnings than the nominal wages of a workman are of his "real" wages.

Accounting Mechanics *versus* Economic Interpretation

The monetary postulate says, the value that each dollar entered in the books had at the time the transaction it records took place is exactly the same as that of all the other dollars entered in the books. This postulate leads to fallacious conclusions in interpretation.

For example, let it be assumed that the income statement of a certain business shows a net income for 1957 of \$100,000 and that its income statement for 1940 shows a net income of \$50,000. From a mechanical comparison it might be said that the net income has increased 100 per cent, but in terms of "real" income the opinion that the income for 1957 and 1940 were equal would probably be nearer the truth because of the change in the purchasing power of money between 1940 and 1957.

As an example of balance sheet comparison of an earlier period, suppose that Company X constructed its plant during 1929 at a cost of \$200,000 and, further, that Company Y constructed its plant, which is exactly like that of Company X, in 1933 at a cost of only \$100,000 because of the change in the price level. From a mechanical comparison of the balance sheets of the two companies, it might be concluded that the plant of Company X is twice the size of that of Company Y, or at least twice as valuable, but the fact is that they are alike. Thus the purchasing power of money at the time of acquisition of properties materially affects their stated dollar amount in the balance sheet.

The fact that an unstable measuring unit is used in accounting poses the greatest impediment to interpretation of its results as found in the financial statements.

Measurement of Fixed Assets

The historical cost basis on which the fixed assets are measured does not provide a satisfactory basis for the measurement of the financial condition of a business subsequent to the acquisition of such assets. The money is "sunk" and might as well be forgotten. During the depression years of the 1930's, to use an extreme illustration, large asset values often disappeared, specialized plants built at great cost and of use only for the purposes for which they were constructed were sacrificed at scrap values because of lack of demand for their products. The replacement cost of fixed assets is of very little interest if replacement is not immediately contemplated, and what they would realize in liquidation is of no importance if it is intended to continue the business. Assets are purchased and used in a business for the purpose of earning income, and their value to the business as a going concern depends on their earning power. But obviously it is not feasible for the

accountant to measure the assets in accordance with the fluctuation of earnings. For this reason the conventional methods of measurement that have been adopted are the only feasible ones.

Individualistic Nature of Financial Statement Data

Since the accountant in performing the various phases of his work may select any one of several acceptable procedures, the statement data indicate the result of operations and the status of the investment in the business computed on the basis of the procedures selected. If other alternative procedures had been selected, the figures in the statements would be different.

Financial statement figures are thus not absolute, but relative—they are dependent upon the accounting procedures selected. The figures of a certain business for a given year may be compared with similar figures of that business for another year only if the accounting was performed on the same basis during both years. For this reason the accountant is required to follow consistently the same procedures from year to year, and any significant deviation in procedure must be reported. Because there are usually many differences in the accounting procedures used by different enterprises, then statements may be compared only with the greatest caution. Accounting data generally have significance only with respect to the individual enterprise in the statements of which they appear.

It should also be remembered in this connection that the statement figures are dependent not only upon the accounting procedures employed but also upon what the purchasing power of money was at the time the transactions they reflect took place. This statement applies particularly to the acquisition of property, plant, and equipment.

Misuse of Financial Statement Data

Those who do not understand the nature of the accounting figures usually assume that the data are absolute. For example, studies of working capital are sometimes made in a manner which indicates the belief that it is an absolute measure. The indicated working capital of a business, however, depends to a large extent upon the method of treating the inventory. It is also affected by

the inclusion or non-inclusion of such items as prepaid expenses, some enterprises including them in the current assets and others placing them with the deferred charges. For these reasons it is evident that the indicated working capital of one business may not be comparable with that of another. Obviously, the computation of the average working capital of groups of companies may lead to erroneous conclusions.

The comparison of the stated dollar amounts of the plant, property, and equipment of different companies also has no validity unless the properties of the companies compared were acquired at the same price level, a situation which is hardly to be found.

Accounting data are compiled for individual business entities, not for the economy as a whole. The figures of one enterprise may be compared with those compiled for another only with great care. The combination of the financial statement data of different enterprises for statistical studies is usually unsatisfactory.

The Problem of Interpretation

The analysis and interpretation of the financial statements of a business enterprise usually has as its objective the formation of an opinion with respect to the financial condition of that enterprise, that is, with respect to the status of that business in the economic world. An opinion with respect to financial condition usually cannot be obtained by an inspection of the financial statements, since they show merely the position of the financial accounting of the business in the realm of accounting conventions. It is necessary to base the opinion on economic facts. *Thus, the problem of the interpretation of the financial statements is that of the utilization of the accounting data as a starting point for the discovery of economic facts about a business.* How this may be done is demonstrated in later chapters of this book.

Price-Level Adjustment

Accountants have for many years given serious consideration to the problem of how to overcome the difficulty in the interpretation of financial statements caused by the instability of the measuring unit used in accounting, in the United States the dollar. The solutions proposed may be divided into two classes (1) to adjust the accounting records to show changes in the purchasing power of the dollar, and (2) to continue adherence to the traditional procedure but to supplement the customary financial statements with data stated in current dollars. It is generally agreed that for price-level adjustment the purchasing power of the dollar is to be measured by index numbers such as are compiled by the United States Bureau of Labor Statistics and other organizations.

Adjustment of the Accounts to the Price Level

Some of the proponents of price-level adjustment of the accounts have suggested the use of a specific index for each type buildings, machinery, furniture and fixtures, inventories, labor, selling expenses, and so forth. This would be, to a considerable extent, the equivalent of adjustment to replacement cost.¹ Others have indicated their preference for the use of an index of the general price level to be applied to all accounts.²

¹ A description of the use of specific indexes for the adjustment of the accounts of an actual business, that of N. V. Philips' Gloeilampenfabriek, in the Netherlands, is given in A. Goudekot, "An Application of Replacement Value Theory," *The Journal of Accountancy*, July, 1960, Vol. 110, pages 37-47.

² The use of an index of the general price level in account adjustment is described in Max I. Epps, "Realistic Accounting under South American Inflation," *The Journal of Accountancy*, January, 1961, Vol. 111, pages 67-73.

The adjustment of the accounts in accordance with changes in the purchasing power of the monetary unit in which they are stated would be a departure from the traditional cost basis. Although accountants do not, as is sometimes alleged, regard the cost basis as sacred, they naturally hesitate to abandon it without the certainty that the basis that is to supersede it is preferable. At the time of this writing no suggested procedure for the adjustment of the accounts has met with any reasonable degree of approval.

Depreciation and the Price Level

Some accountants regard the contemporary problem of the price level as primarily concerned with depreciation charges. They hold that since the determination of the net income for a certain year is the central feature of accounting, the most important application of price-level adjustment is with respect to depreciation. They point out that in most other respects the contemporary income statement reasonably reflects current prices: the sales and the selling, general, and administrative expenses are more or less on the price level of the year under review, as is also the cost of sales when the LIFO method is used. If the depreciation charges were put on the replacement cost basis, they would be on a basis similar to that of the LIFO inventory. Under the replacement cost procedure the fixed assets would be adjusted to "real" or "economic values" in the balance sheet and the income statement would show "economic depreciation."³

A further argument in favor of "economic depreciation" is based on the concept that the cost of replacement of the fixed assets rather than their original cost is one of the costs of doing business since "economic capital" should be maintained, that is, the business should earn enough to replace its assets in condition for future operation. However, as was explained in Chapter 3, the traditional accounting concept of depreciation is that of an allocation of cost to revenue. Accounting is not concerned with how assets are to be replaced. This reasoning is strengthened by the fact that in many cases, because of technological changes,

³ A plea for the use of "economic depreciation" is to be found in Paul Grady, "Economic Depreciation in Income Taxation and in Accounting," *The Journal of Accountancy*, April, 1959, Vol. 107, pages 54-60.

most of the equipment discarded is more likely than not to be replaced by other types of equipment

Supplementary Financial Statement Data

Proposals for solving the price-level problem in a manner in which traditional accounting procedure is maintained and the financial statements supplemented by information with respect to price-level changes appears more acceptable to accountants than methods whereby such information would be included in the accounts. The following suggestions have been made in this connection

(1) That information with respect to replacement cost and depreciation on replacement cost be given in notes to the financial statements

(2) That supplementary financial statements be prepared in which all items are restated in terms of dollars of uniform purchasing power, this to be achieved by applying index numbers of general prices to the figures in the customary statements

Adjustment by Index Numbers of the General Price Level

The pioneer work in the field of adjustment of the financial statements by the use of index numbers is that of Henry W. Sweeney,⁴ who called the procedure developed by him "stabilized accounting." Sweeney offered three objections to conventional accounting procedure (1) Men invest in business ultimately to obtain consumption goods, and therefore they should be informed as to the status of their investment in terms of purchasing power over these consumption goods. The usual procedure produces statements that do not give such information (2) The usual procedure is mathematically unsound, for its results are arrived at by methods that scramble together dollar values of different years, and these dollars are, because of fluctuations in purchasing power, different kinds of dollars. Therefore, the results are like the addition of pears, apples, and peaches to get a total of pears (3) The accepted procedure is incomplete, because it does not account for gains and losses resulting from changes in the value

⁴ Henry W. Sweeney, *Stabilized Accounting* New York: Harper & Bros., 1936

of money Sweeney accordingly proposed that the accounting figures as of a closing date be adjusted on the basis of the purchasing power of the dollar at that time by means of index numbers of general prices

The question with respect to the feasibility of adjusting financial statement data by the use of index numbers came to the fore after World War II because of the rapid rise in the price level. A Study Group on Business Income was organized under the auspices of the American Institute of Certified Public Accountants for the purpose of making "a survey and a historical study of the uses of the word 'income' and terms associated therewith in accounting and in business, economic, and political fields." The Group published the results of its findings in 1952.⁵

One of the problems considered by the Study Group on Business Income was, "What changes in practice are called for where the assumption of reasonable stability of the monetary unit is regarded as unwarranted?" The Group came to the conclusion, "It is believed that statements of business income in which revenues and charges against revenue would be stated in units of substantially the same purchasing power would be significant and useful for many of the purposes for which income determinations are commonly used, if not also in reports upon stewardship."⁶

In 1955, under the auspices of the American Accounting Association, Ralph Coughenour Jones published a study in the price-level adjustment of the statements of four companies: New York Telephone Company, Armstrong Cork Company, The Reece Corporation, and Sargent and Company.⁷ The study was intended to demonstrate (1) how supplementary financial statements expressed in "constant-value units" might be prepared and (2) how such supplementary statements might be compared with conventional financial statements "in order to measure the effect of inflation," and (3) to give those interested some basis for judging the need for such supplementary statements.

The work of the Study Group on Business Income was concerned primarily with income determination of a business enter-

⁵ *Changing Concepts of Business Income*, Report of Study Group on Business Income. New York: The Macmillan Company, 1952.

⁶ *Ibid.*, page 105.

⁷ Ralph Coughenour Jones, *Price Level Changes and Financial Statements, Case Studies of Four Companies*. American Accounting Association, 1955.

prise in a given year, that of Jones, with the broader problem of the restatement of both the income statement and the balance sheet in dollars of uniform purchasing power and the comparison of the results of successive years in such "constant-value units"

The Price-Level Adjustment Technique

The objective of price-level adjustment of the financial statements is to obtain comparability of the data by stating the items in units of uniform purchasing power. The technique consists of two phases

(1) The conversion of all items in each statement in terms of the purchasing power of the dollar at the end of the year in order to obtain comparability of the data of that year

(2) The conversion of all items in comparative statements in terms of the purchasing power of the dollar at the end of the last year in order to obtain comparability of the data of more than one year

Price-level conversion of more than one statement may be made into the dollar at the end of the first year, the last year, or any year in a series of years. However, conversion into the dollar at the end of the last year is preferable, because the last year is of greatest interest to those concerned.

The following comparative statements for 1958 and 1959 of The A Corporation, a hypothetical merchandising business, illustrated in Figures 1 and 2, will be used to demonstrate how price-level adjustment may be performed. The Consumer Price Index of the United States Bureau of Labor Statistics will be used.⁸

The base date to be used for the conversion of The A Corporation's comparative statements is, accordingly, December 31, 1959. It is assumed that the purchasing power of the dollar on that date was 1.00. Thus, the purchasing power of the dollar on any other date or for any period is 125.5 (the index for December, 1959) divided by the index for the date or period under consideration. For example, the average index for 1957 was 120.2. Therefore, the average purchasing power of the 1957 dollar in

⁸ The method here used is substantially that outlined in Perry Mason, *Price-Level Changes and Financial Statements, Basic Concepts and Methods*. American Accounting Association, 1958.

THE A CORPORATION
Comparative Balance Sheet
December 31, 1958 and 1959
(As reported)

<i>Assets</i>	<u>1959</u>	<u>1958</u>	<u>Increase Decrease*</u>
Current Assets			
Cash	\$ 395,000	\$ 237,000	\$ 158,000
Marketable securities (at cost)	150,000	100,000	50,000
Accounts receivable (less estimated uncollectibles)	197,000	159,000	38,000
Merchandise inventory (on FIFO basis at the lower of cost or market)	278,000	252,000	26,000
Prepaid expenses	8,000	5,000	3,000
Total current assets	<u>\$1,028,000</u>	<u>\$ 753,000</u>	<u>\$ 275,000</u>
Property and Equipment			
Land	\$ 200,000	\$ 200,000	\$ —
Building	1,250,000	1,250,000	—
Equipment	1,454,000	1,318,000	136,000
Total cost of property and equipment	<u>\$2,904,000</u>	<u>\$2,768,000</u>	<u>\$ 136,000</u>
Less Accumulated depreciation			
Building	\$ 75,000	\$ 50,000	\$ 25,000
Equipment	182,000	109,000	73,000
Total accumulated depreciation	<u>\$ 257,000</u>	<u>\$ 159,000</u>	<u>\$ 98,000</u>
Net property and equipment	<u>\$2,647,000</u>	<u>\$2,609,000</u>	<u>\$ 38,000</u>
	<u><u>\$3,675,000</u></u>	<u><u>\$3,362,000</u></u>	<u><u>\$ 313,000</u></u>
<i>Liabilities and Capital</i>			
Current Liabilities			
Accounts payable	\$ 375,000	\$ 328,000	\$ 47,000
Accrued expenses	3,000	2,000	1,000
Total current liabilities	<u>\$ 378,000</u>	<u>\$ 330,000</u>	<u>\$ 48,000</u>
Long-term Debt			
Mortgage payable, due January 1, 1962	<u>\$ 100,000</u>	<u>\$ 100,000</u>	<u>\$ —</u>
Capital Stock			
Common stock (Par, \$100)	\$3,000,000	\$2,800,000	\$ 200,000
Retained Earnings	197,000	132,000	65,000
Stockholders' equity	<u>\$3,197,000</u>	<u>\$2,932,000</u>	<u>\$ 265,000</u>
	<u><u>\$3,675,000</u></u>	<u><u>\$3,362,000</u></u>	<u><u>\$ 313,000</u></u>

Fig 1

terms of the December, 1959 dollar was 125 5 — 120 2, or 1 044

Conversion is performed by multiplying each amount to be converted by the purchasing power of the dollar on the date or for the period on this basis. This is the *conversion factor*.

The index numbers required for the conversion of The A Corporation's statements are given below, together with the conversion factor for each date or period.

Date	Index	Conversion Factors
	1947-49 = 100	Dec 1958 = 100
Average, 1957	120 2	1 029
Average, Oct -Dec , 1957	121 4	1 019
Average, 1958	123 5	1 002
Average, Oct -Dec , 1958	123 8	999
December, 1958	123 7	1 000

	Conversion Factors	
	Dec 1959 = 100	
Average, 1957	120 2	1 044
Average, Oct -Dec , 1957	121 4	1 034
December, 1957	121 6	1 032
Average, 1958	123 5	1 016
Average, Oct -Dec , 1958	123 8	1 014
December, 1958	123 7	1 015
Average, 1959	124 6	1 007
Average, Oct -Dec , 1959	125 5	1 000
December, 1959	125 5	1 000

THE A CORPORATION
Comparative Income Statement
For Years Ended December 31, 1958 and 1959
(As reported)

	1959	1958	Increase Decrease*
Sales (net)	\$2,588,000	\$1,838,000	\$ 750,000
Less			
Cost of goods sold	\$1,062,000	\$ 753,000	\$ 309,000
Depreciation	98,000	91,000	7,000
Other expenses, less other income	678,000	472,000	206,000
	<u>\$1,838,000</u>	<u>\$1,316,000</u>	<u>\$ 522,000</u>
Net income before federal income taxes	\$ 750,000	\$ 522,000	\$ 228,000
Federal income taxes	385,000	265,000	120,000
Net income for the year	<u>\$ 365,000</u>	<u>\$ 257,000</u>	<u>\$ 108,000</u>
Dividend paid	300,000	280,000	20,000
Balance to retained earnings	<u>\$ 65,000</u>	<u>(\$ 23,000)</u>	<u>\$ 88,000</u>

Fig 2

ADJUSTMENT OF THE INCOME STATEMENTS

Adjustment of the Income Statement for Year Ended December 31, 1958

Sales Let it be assumed that information is obtained that the sales were made at an even rate during the year. The Index for the average price level for 1958 is 123.5. The sales for the year are converted to the price level of December, 1958 by using the conversion factor 1.002. Thus,

$$\$1,838,000 \times 1.002 = \$1,841,700$$

Cost of goods sold Given the merchandise inventory at January 1, 1958 as \$124,000, and using the merchandise inventory at December 31, 1958 shown in the comparative balance sheet as reported, the following calculation is made

Cost of goods sold	\$ 753,000
Add Merchandise inventory, December 31, 1958	252,000
Total of goods sold and goods still in stock	<u>\$1,005,000</u>
Less Merchandise inventory, January 1, 1958	124,000
Merchandise purchases during 1958	<u>\$ 881,000</u>

The turnover of merchandise, that is, the number of times the stock was sold out, may now be calculated. This is obtained by dividing the cost of goods sold by the average inventory. Using the information available, the average inventory is obtained by adding the initial inventory and final inventory and dividing by 2. Thus,

$$\begin{aligned} \$124,000 + \$252,000 &= \$376,000 \\ \$376,000 \div 2 &= \$188,000 \end{aligned}$$

Then, dividing the cost of goods sold by the average inventory, there is obtained the rate of turnover

$$\$753,000 \div \$188,000 = 4 \text{ times}$$

Since the FIFO inventory method is used and the inventory turnover is 4 times, it will be assumed that the inventory on January 1, 1958 was acquired in the period October–December, 1957, and the inventory on December 31, 1958 in the period October–December, 1958, at the average prices for these periods

Converting the figures in the calculation of the cost of goods sold by the various conversion factors gives

Merchandise inventory, January 1, 1958	$\$124,000 \times 1.019 = \$$	126,400
Merchandise purchases during 1958	$881,000 \times 1.002 =$	882,008
		<u>\$1,009,200</u>
Merchandise inventory, December 31, 1958	$252,000 \times .999 =$	251,700
Cost of goods sold (in December 1958 dollars)		<u>\$ 757,500</u>

Depreciation Given the details of the book amounts of property and equipment acquired in each year and the rates at which they are depreciated by the straight-line method, the following schedule is prepared

	Year Ac- quired	Depre- ciation Rate	Book Cost	Con- version Factor	Adjusted Cost	Annual Depreciation	
						Book	Ad- justed
Land	1957	—	\$ 200,000	1.020	\$ 205,800	\$ —	\$ —
Building	1957	2%	1,250,000	1.029	1,286,300	25,000	25,700
Equipment	1957	5%	862,000	1.029	887,000	43,000	44,300
Equipment	1958	5%	456,000	1.002	456,900	23,000	23,000
			<u>\$2,768,000</u>		<u>\$2,836,000</u>	<u>\$91,000</u>	<u>\$93,000</u>

Other expenses Assuming that the other expenses were incurred at the average price level for the year, these are converted to the December 1958 price level by the use of the conversion factor 1.002

$$\$472,000 \times 1.002 = \$472,900$$

Federal income tax Since the sales were made and expenses incurred at an even rate throughout the year, it is reasonable to assume that the federal income tax accrued at the average rate for the year. It is therefore converted to the December 1958 price level by the use of the conversion factor 1.002

$$\$265,000 \times 1.002 = \$265,500$$

Dividend paid Given the information that the dividend was paid in December, no adjustment is necessary

The Adjusted Income Statement for Year Ended December 31, 1958

The A Corporation's adjusted income statement for year ended December 31, 1958, in December 1958 dollars, is shown in Figure 3

THE A CORPORATION
Adjusted Income Statement
For Year Ended December 31, 1958
(In December 1958 dollars)

Sales (net)		\$1,841,700
Less		
Cost of goods sold	\$757,500	
Depreciation	93,000	
Other expenses, less other income	<u>172,900</u>	1,323,400
Net income before federal income taxes		\$ 518,300
Federal income taxes		<u>265,500</u>
Net income for the year		\$ 252,800
Dividend paid		<u>280,000</u>
Balance to retained earnings		<u>(\$ 27,200)</u>

Fig 3.

**Adjustment of the Income Statement for Year Ended
December 31, 1959**

The procedure for the adjustment of the 1959 income statement will be the same as that used for the adjustment of the 1958 income statement

Sales The sales are converted from the average price level for 1959 to that of December 1959 by the use of the conversion factor 1.007. Thus,

$$\$2,588,000 \times 1.007 = \$2,606,000$$

Cost of goods sold Using the inventories shown in the comparative balance sheet for years ended December 31, 1958 and 1959, the following calculation is made

Cost of goods sold	\$1,062,000
Add Merchandise inventory, December 31, 1959	<u>278,000</u>
Total of goods sold and goods still in stock	\$1,340,000
Less Merchandise inventory, January 1, 1959	<u>252,000</u>
Merchandise purchases during 1959	<u>\$1,088,000</u>

The rate of turnover is calculated as follows

$$\begin{aligned} \$252,000 \div \$278,000 &= .907 \\ \$907,000 \div 2 &= \$453,500 \\ \$1,062,000 \div \$453,500 &= 2.34 \text{ times, as in 1958} \end{aligned}$$

Converting the figures in the calculation of the cost of goods sold by the various conversion factors gives

Merchandise inventory, January 1, 1959	\$ 202,000 × 1 014 = \$ 255,500
Merchandise purchases during 1959	1,088,000 × 1 007 = 1,095,600
	<u>\$1,351,100</u>
Merchandise inventory, December 31, 1959	278,000 × 1 000 = 278,000
Cost of goods sold (in December 1959 dollars)	<u><u>\$1,073,100</u></u>

Depreciation. The following schedule is prepared

	Year Ac- quired	Depre- ciation Rate	Book Cost	Con- version Factor	Adjusted Cost	Annual Depreciation	
						Book	Adjusted
Land	1957	—	\$ 200,000	1 044	\$ 208,800	\$ —	\$ —
Building	1957	2%	1,250,000	1 044	1,305,000	25,000	26,100
Equipment	1957	5%	862,000	1 044	899,900	43,000	44,900
Equipment	1958	5%	456,000	1 016	463,300	23,000	23,400
Equipment	1959	5%	136,000	1 007	137,000	7,000	7,000
			<u>\$2,904,000</u>		<u>\$3,014,000</u>	<u>\$98,000</u>	<u>\$101,400</u>

Other expenses The other expenses are converted to the December 1959 price level by the use of the conversion factor 1 007

$$\$678,000 \times 1 007 = \$682,700$$

Federal income tax The federal income tax is converted to the December 1959 price level by the use of the conversion factor 1 007

$$\$385,000 \times 1 007 = \$387,700$$

Dividend paid The dividend is not converted since the information is given that it was paid in December.

The Adjusted Income Statement for Year Ended December 31, 1959

The A Corporation's adjusted income statement for the year ended December 31, 1959, in December 1959 dollars, is shown in the first column of Figure 4

The Adjusted Comparative Income Statement for Years Ended December 31, 1958 and 1959

To prepare the adjusted comparative income statement of The A Corporation for years ended December 31, 1958 and 1959, stated in December 1959 dollars, each item in the adjusted 1958

income statement is multiplied by the conversion factor 1 015. The adjusted 1959 income statement requires no further adjustment and is placed in juxtaposition with the 1958 statement stated in December 1959 dollars. The resulting adjusted comparative income statement is shown in Figure 4.

THE A CORPORATION
Adjusted Comparative Income Statement
For Years Ended December 31, 1958 and 1959
(In December 1959 dollars)

	1959	1958	Increase Decrease*
Sales (net)	\$2,606,000	\$1,869,300	\$ 736,700
Less:			
Cost of goods sold	\$1,073,100	\$ 768,900	\$ 304,200
Depreciation	101,400	94,400	7,000
Other expenses, less other income	682,700	180,000	202,700
	<u>\$1,857,200</u>	<u>\$1,343,300</u>	<u>\$ 513,900</u>
Net income before federal income taxes	\$ 748,800	\$ 526,000	\$ 222,800
Federal income taxes	387,700	269,500	118,200
Net income for the year	<u>\$ 361,100</u>	<u>\$ 256,500</u>	<u>\$ 104,600</u>
Dividend paid	300,000	284,200	15,800
Balance to retained earnings	<u>\$ 61,100</u>	<u>(\$ 27,700)</u>	<u>\$ 88,800</u>

Fig. 4

ADJUSTMENT OF THE BALANCE SHEETS

Adjustment of the Balance Sheet, December 31, 1958

Cash and receivables. The balances of the cash and the receivables require no adjustment since they are stated in December 1958 dollars.

Marketable securities. The marketable securities are temporary investments to be converted into cash when so desired. They are thus regarded as "near cash" and are here treated in the same manner as cash. They are stated by The A Corporation at cost which is the most common method used in stating marketable securities. There may be a profit or loss upon their sale but this can be determined only at the time of sale.

Merchandise inventory. The merchandise inventory was adjusted in the process of adjusting the income statement.

Prepaid expenses Given the information that the prepaid expenses were incurred during the last three months of 1958, they are converted to December 1958 dollars by using the conversion factor 999.

$$\$5,000 \times 999 = \$5,000$$

Property and equipment The adjusted figures for property and equipment and the accumulated depreciation thereon are derived from the schedule prepared for the adjustment of the income statement. The accumulated depreciation is

1957	\$ 70,000
1958	93 000
	<u>\$163,000</u>

Liabilities The liabilities are stated in December 1958 dollars and require no adjustment.

Capital stock Information is given that the corporation was organized in 1957 and that the \$2,800,000 capital stock was paid for at various dates during that year, or in average 1957 dollars. This amount is converted into December 1958 dollars by use of the conversion factor 1.029.

$$\$2,800,000 \times 1.029 = \$2,881,200$$

Retained earnings The adjusted retained earnings figure is the difference between the adjusted assets and the adjusted liabilities and capital stock.

The Adjusted Balance Sheet, December 31, 1958

The A Corporation's balance sheet as of December 31, 1958, stated in December 1958 dollars, is shown in Figure 5.

Adjustment of the Balance Sheet, December 31, 1959

The balances of the cash, marketable securities, receivables, and liabilities are regarded as stated in December 1959 dollars and, therefore, are not adjusted. The following data are used in the adjustment of the other items.

Prepaid expenses Information is given that the prepaid expenses were paid for at various times during the year. Using the conversion factor 1.007 gives

$$\$8,000 \times 1.007 = \$8,056$$

THE A CORPORATION
Adjusted Balance Sheet
December 31, 1958
(In December 1958 dollars)

<i>Assets</i>			
Current Assets			
Cash		\$ 237,000	
Marketable securities (at cost)		100,000	
Accounts receivable (less estimated uncollectibles)		150,000	
Merchandise inventory (on FIFO basis at the lower of cost or market)		251,700	
Prepaid expenses		<u>5,000</u>	
Total current assets			\$ 752,700
Property and Equipment			
Land		\$ 205,800	
Building		1,286,300	
Equipment		<u>1,343,000</u>	
Total cost of property and equipment		\$2,835,000	
Less Accumulated depreciation			
Building	\$ 51,500		
Equipment	<u>111,500</u>	<u>163,000</u>	
Net property and equipment			<u>2,673,000</u>
			<u><u>\$3,425,700</u></u>
<i>Liabilities and Capital</i>			
Current Liabilities			
Accounts payable		\$ 328,000	
Accrued expenses		<u>2,000</u>	
Total current liabilities			\$ 330,000
Long-term Debt			
Mortgage payable, due January 1, 1962			100,000
Capital Stock			
Common stock (Par, \$100)		\$2,881,200	
Retained Earnings		<u>114,500</u>	
Stockholders' equity			<u>2,995,700</u>
			<u><u>\$3,425,700</u></u>

Fig. 5

Property and equipment The adjusted figures for property and equipment and the accumulated depreciation thereon are derived from the schedule prepared for the adjustment of the income statement for year ended December 31, 1959. The adjusted accumulated depreciation at December 31, 1958 was \$163,000. This is converted to December 1959 dollars by use of the conversion factor 1.015.

\$163,000 \times 1 015 =	\$165,400
Add Adjusted depreciation for 1959 as shown in schedule prepared for adjusted income statement	<u>101,400</u>
	<u><u>\$266,800</u></u>

Capital stock The capital stock contribution adjusted as of December 31, 1958 was \$2,881,200. Converting this to December 1959 dollars

\$2,881,200 \times 1 015 =	\$2,924,400
Add Additional stock sold in De- cember 1959 and thus requiring no adjustment	<u>200,000</u>
	<u><u>\$3,124,400</u></u>

The Adjusted Balance Sheet, December 31, 1959

The A Corporation's balance sheet as of December 31, 1959, stated in December 1959 dollars, is shown in the first column of Figure 6

The Adjusted Comparative Balance Sheet, December 31, 1958 and 1959

The adjusted comparative balance sheet is prepared in a manner similar to that of the adjusted comparative income statement. Each item in the adjusted balance sheet as of December 31, 1958 is multiplied by the conversion factor 1 015. The adjusted balance sheet as of December 31, 1959 requires no further adjustment. The resulting adjusted comparative balance sheet of The A Corporation, December 31, 1958 and 1959, stated in December 1959 dollars, is shown in Figure 6

Comparison of Reported and Adjusted Income Statements

The income statements of The A Corporation for year ended December 31, 1959 as reported and as adjusted in December 1959 dollars are compared in Figure 7. The sales as adjusted are \$18,000 greater than as reported. However, since the adjusted deductions before federal income taxes are \$19,200 greater than reported, the adjusted net income before federal income taxes is \$1,200 less

THE A CORPORATION
Adjusted Comparative Balance Sheet
December 31, 1958 and 1959
(In December 1959 dollars)

<i>Assets</i>	<u>1959</u>	<u>1958</u>	<u>Increase Decrease*</u>
Current Assets			
Cash	\$ 395,000	\$ 240,600	\$ 154,400
Marketable securities (at cost)	150,000	101,500	48,500
Accounts receivable (less estimated uncollectibles)	197,000	161,400	35,600
Merchandise inventory (on FIFO basis at the lower of cost or market)	278,000	255,500	22,500
Prepaid expenses	8,000	5,000	3,000
Total current assets	<u>\$1,028,000</u>	<u>\$ 764,000</u>	<u>\$ 264,000</u>
Property and Equipment			
Land	\$ 208,800	\$ 208,800	\$ —
Building	1,305,000	1,305,000	—
Equipment	1,500,200	1,363,200	137,000
Total cost of property and equipment	<u>\$3,014,000</u>	<u>\$2,877,000</u>	<u>\$ 137,000</u>
Less Accumulated depreciation			
Building	\$ 78,300	\$ 52,200	\$ 26,100
Equipment	188,500	113,200	75,300
Total accumulated depreciation	<u>\$ 266,800</u>	<u>\$ 165,400</u>	<u>\$ 101,400</u>
Net property and equipment	<u>\$2,747,200</u>	<u>\$2,711,600</u>	<u>\$ 35,600</u>
	<u>\$3,775,200</u>	<u>\$3,475,600</u>	<u>\$ 299,600</u>
 <i>Liabilities and Capital</i>			
Current Liabilities			
Accounts payable	\$ 375,000	\$ 332,900	\$ 42,100
Accrued expenses	3,000	2,000	1,000
Total current liabilities	<u>\$ 378,000</u>	<u>\$ 334,900</u>	<u>\$ 43,100</u>
Long-term Debt			
Mortgage payable, due January 1, 1962	<u>\$ 100,000</u>	<u>\$ 101,500</u>	<u>\$ 1 500*</u>
Capital Stock			
Common stock (Par, \$100)	\$3,124,400	\$2,924,400	\$ 200,000
Retained Earnings	172,800	114,800	58,000
Stockholders' equity	<u>\$3,297,200</u>	<u>\$3,039,200</u>	<u>\$ 258,000</u>
	<u>\$3,775,200</u>	<u>\$3,475,600</u>	<u>\$ 299,600</u>

Fig 6

than reported The adjusted federal income taxes exceed the reported amount by \$2,700, with the result that the adjusted net income is \$3,900 less than reported The price-level adjustment has thus resulted in indicating the difference between the net

THE A CORPORATION
Comparative Income Statement
For Year Ended December 31, 1959
(As reported and as adjusted in December 1959 dollars)

	As Reported	Adjusted in Dec 1959 Dollars	Increase Decrease* by Ad- justment
Sales (net)	<u>\$2,588,000</u>	<u>\$2,606,000</u>	<u>\$18,000</u>
Less			
Cost of goods sold	\$1,062,000	\$1,073,100	\$11,100
Depreciation	98,000	101,400	3,400
Other expenses, less other income	678,000	682,700	4,700
	<u>\$1,838,000</u>	<u>\$1,857,200</u>	<u>\$19,200</u>
Net income before federal income taxes	\$ 750,000	\$ 748,800	\$ 1,200*
Federal income taxes	385,000	387,700	2,700
Net income for the year	\$ 365,000	\$ 361,100	\$ 3,900*
Dividend paid	300,000	300,000	—
Balance to retained earnings	<u>\$ 65,000</u>	<u>\$ 61,100</u>	<u>\$ 3,900*</u>

Fig 7

THE A CORPORATION
Comparative Statement of Retained Earnings
For Year Ended December 31, 1959
(As reported and as adjusted in December 1959 dollars)

	As Reported	Adjusted in Dec 1959 Dollars	Decrease by Ad- justment
Balance, December 31, 1958	\$132,000	\$114,800	\$17,200
Add Net income for the year	365,000	361,100	3,900
	<u>\$497,000</u>	<u>\$475,900</u>	<u>\$21,100</u>
Less Dividend paid	300,000	300,000	—
	<u>\$197,000</u>	<u>\$175,900</u>	<u>\$21,100</u>
Less Net loss on price level adjustment	—	3,100	3,100
Balance, December 31, 1959	<u>\$197,000</u>	<u>\$172,800</u>	<u>\$24,200</u>

Fig 8

income stated in December 1959 dollars and the reported net income computed by conventional accounting methods

Comparison of Reported and Adjusted Retained Earnings

The balance sheet of The A Corporation on December 31, 1959, as adjusted in December 1959 dollars, shows the retained

earnings \$24,200 less than in the balance sheet as reported. This difference is the result of the adjustment of the assets and the capital stock as follows:

Total assets		
As adjusted (Fig. 6)	\$3,775,200	
As reported (Fig. 1)	<u>3,675,000</u>	
Difference		\$100,200
Capital stock		
As adjusted (Fig. 6)	\$3,121,400	
As reported (Fig. 1)	<u>3,000,000</u>	
Difference		<u>121,400</u>
Decrease in retained earnings by price-level adjustment of balance sheet		<u>\$ 24,200</u>

Figure 8, in which the reported and adjusted retained earnings statements are compared, shows the causes of the decrease in retained earnings by price-level adjustment as

Adjustment of December 31, 1958 retained earnings	\$17,200
Adjustment of the net income for year ended December 31, 1959	3,900
Net loss on price-level adjustment	<u>3,100</u>
	<u>\$24,200</u>

The net loss on price-level adjustment consists of two factors: (1) a gain of \$1,000 by the adjustment of the cost of the equipment acquired during 1959 from \$136,000 to \$137,000 (see schedule, page 47), (2) a net purchasing-power loss of \$4,300 on the fixed-dollar assets and liabilities.

Gains and Losses on Fixed-dollar Assets and Liabilities

The fixed-dollar or monetary assets and liabilities consist of cash, claims to cash (receivables and investments), and obligations to pay fixed sums (liabilities). Gains and losses take place merely by possession of such items over a period of time. For example, in a period of decline in the purchasing power of the dollar there is a purchasing-power loss on cash held and on receivables uncollected while, on the other hand, there is a gain on liabilities unpaid since these will be paid in dollars of diminished purchasing power.

The net gain or loss on fixed-dollar assets and liabilities is determined by the facts given recognition and the assumptions

made in adjusting the statements. If, for example, The A Corporation had paid four quarterly dividends of \$75,000 during the year instead of one of \$300,000 at the end of the year, the dividends would have been adjusted by the conversion factor for the average 1959 price level, 1.007, thus making the dividend deduction from retained earnings \$302,100 and reducing the loss on price-level adjustment from \$4,300 to \$2,200.

Assumptions other than that the sales were made at an even rate, that the rate of merchandise turnover was exactly four times and that, therefore, the inventories were purchased at the average price level of the last three months of the year, and that the "other expenses, less other income" were incurred at the average price level for the year, would produce a different net loss or perhaps a net gain on price-level adjustment.

The fixed-dollar assets and liabilities of The A Corporation on December 31, 1958 as reported and as adjusted in December 1959 dollars follows:

	As Reported Dec. 31, 1958	Adjusted in Dec. 1959 Dollars	Purchasing Power Gain Loss*
Fixed-dollar Assets			
Cash	\$237,000	\$240,600	\$3,600*
Marketable securities	100,000	101,700	1,700*
Accounts receivable	159,000	161,400	2,400*
	<u>\$496,000</u>	<u>\$503,700</u>	<u>\$7,700*</u>
Fixed-dollar Liabilities			
Current liabilities	\$330,000	\$334,900	\$4,900
Mortgage payable	100,000	101,500	1,500
	<u>\$430,000</u>	<u>\$436,400</u>	<u>\$6,400</u>
Net fixed-dollar assets and liabilities	<u>\$ 66,000</u>	<u>\$ 67,300</u>	<u>\$1,300†</u>

From the above it is seen, for example, that the reported cash of \$237,000 was converted to \$240,600 in terms of December 1959 dollars, signifying that cash on hand having a purchasing power of \$240,600 on January 1, 1959 held during the year would have had a purchasing power of only \$237,000 on December 31, 1959—a purchasing-power loss of \$3,600. On the other hand, the conversion of the mortgage payable from \$100,000 to \$101,500 indicates that \$101,500 owed on January 1, 1959 would be paid on December 31, 1959 in dollars having a purchasing power of only \$100,000—a purchasing-power gain of \$1,500.

In order to account for the net purchasing-power loss on the

fixed-dollar assets and liabilities of The A Corporation during 1959, the amount of such assets and liabilities held during the year would have to be ascertained. For the purpose of illustrating the principle involved, let it be assumed that during the year none of the fixed-dollar items declined below the amount held at the beginning of the year. There was, therefore, a net purchasing-power loss on these minimum balances of \$1,300, as shown in the above tabulation. This leaves an additional net purchasing-power loss of \$2,800 to be accounted for which must be the loss on the average fixed-dollar assets and liabilities held in excess of the minimum balances. In practice, it is hardly feasible to determine such an average. However, to illustrate, let it be assumed that the average excess was found to be \$400,000. Then, applying the 1959 average conversion factor to this average excess

$$\$400,000 \times 1.007 = \$402,800$$

Since \$402,800 exceeds \$400,000 by \$2,800, the additional net loss in purchasing power has been accounted for.

The \$3,100 net loss on price-level adjustment of The A Corporation during 1959 is thus accounted for as follows:

Loss in purchasing power on \$60,000, the minimum balance of net fixed-dollar assets and liabilities held during 1959	\$1,300
Loss on net excess over the minimum balance of fixed-dollar assets and liabilities held during 1959	<u>2,800</u>
	\$4,100
Less Gain on adjustment of the cost of the equipment purchased during 1959	<u>1,000</u>
Net loss on price-level adjustment	<u>\$3,100</u>

Objections to the Foregoing Procedure

Two defects in price-level adjustment as here demonstrated are that the results depend on the more or less arbitrary assumptions made in the process of adjustment, and on the index used. The types of assumptions made have already been mentioned. With respect to the index used, there is considerable doubt whether the Consumer Price Index of the United States Bureau of Labor Statistics is satisfactory for the purpose of adjusting the financial statements of business enterprises since it has not been constructed for this purpose. It has been prepared to measure the purchasing power of the dollars used by individuals for their

common daily needs. It does not follow that it measures the purchasing power of the dollars used for business purposes. An index for such measurement, which does not exist at the time of this writing, would undoubtedly be different and would more correctly adjust the financial statements of business enterprises.

If the LIFO inventory method is used, it is necessary to have available an analysis of the initial inventory according to dates of acquisition. Upon converting the cost of goods sold and the final inventory, consideration must be given to (1) an analysis of the merchandise purchased during the year according to time of acquisition, and (2) the price-level analysis of the initial inventory. These analyses might prove to be troublesome to compile, particularly if many different items are carried in stock.

Practical Treatment of the Price-Level Problem

Until such time as a method of proven validity has been generally accepted for the adjustment of the accounting data, the analyst will of necessity use the figures provided, but he will take into consideration such information as he has available with respect to the price level. This procedure, to be sure, cannot be expected to yield precise results, but they may be as good, if not better than those obtained through mathematical manipulation of doubtful validity.

Trends in Accounting Principles and Procedures

Since the early 1930's, there has been a notably active re-examination and revision of the concepts, rules, and techniques of accounting, with a consequent material effect on financial statement presentation. It is the object of this chapter to review the efforts of accountants toward technical improvement and to outline the more significant of the discernible trends in accounting principles and procedures in order that the analyst may understand the differences he will encounter between current statements and those of yesteryear.

Early Statements Not Intended for Analysis

When bankers began using the financial statements at the turn of the century as a means of studying worthiness of applicants for credit, they were using them for a purpose for which they had not been prepared and for which they were not particularly well suited. Very little change had been made in the method of their preparation since the days when the balance sheet was in the form of a balancing account in the ledger and was looked upon merely as a proof of the bookkeeper's work, and no care was exercised to present a clear showing of financial position.

Even in the early days, however, those concerned became conscious of defects in the statements. The statements lacked uniformity in arrangement, terminology, and the classification of the items they contained. Accordingly, when the statements came to be used on a large scale, the need for better statements became apparent, and those interested began to cope with the problem.

Measures Taken by Accountants toward Improvement

An important contribution tending to improve the form and content of financial statements was made by the Federal Reserve Board in 1918 in a pamphlet titled *Approved Methods for the Preparation of Balance Sheet Statements*.¹ This pamphlet included standard forms for the balance sheet and income statement, an outline of good auditing procedure, and a discussion of the principles of statement construction. In 1929 the pamphlet was turned over to the American Institute of Certified Public Accountants for revision and publication, and three editions have since been published with various titles, as follows: 1929, *Verification of Financial Statements*, 1936, *Examination of Financial Statements by Independent Public Accountants*, and 1950, *Audits by Certified Public Accountants*.

Various committees of the American Institute of Certified Public Accountants have been actively engaged in the work of crystallizing accounting concepts and improving the techniques employed by the profession. In 1920 a Committee on Terminology was appointed which rendered a preliminary report in 1931 and has published various reports since then. The Committee on Cooperation with Bankers has worked with the Robert Morris Associates, an organization of bank credit men, to promote better understanding among accountants, bankers, and credit men. The Committee on Cooperation with Stock Exchanges has worked with the Committee on Stock List of the New York Stock Exchange on the problem of formulating the requirements for financial statements to give satisfactory information to investors. The Committee on Accounting Procedure has issued a series of *Accounting Research Bulletins* which have had a material effect on procedure and thus on the financial statements.

The American Accounting Association has made an important contribution in its *Accounting Concepts and Standards Underlying Corporate Financial Statements*, of which a tentative form was first published in 1936, a second edition in 1941, a third in 1948 and a fourth in 1957, bearing the title *Accounting and Reporting Standards for Corporate Financial Statements*.²

¹ First published in the *Federal Reserve Bulletin*, April, 1917, under the title "Uniform Accounting."

² Published in *The Accounting Review*, Vol. XXXII, 1957, pages 536-546.

A survey of current procedure has been made annually by the Research Department of the American Institute of Certified Public Accountants, beginning with the fiscal year ended June 30, 1947, in order to give "a broad perspective on the latest accounting practices and trends as disclosed in published annual reports." The survey is based on a selected list of 600 representative corporations³ and is helpful in demonstrating the trends in accounting procedure as reflected in corporate reports.⁴

Defects in Published Statements

Although much progress had been made by the middle of the 1920's in the development of better financial statements, it became evident to investors that improvements in accounting technique would be of no avail if the large corporations continued intentionally to obscure the information in their published statements. As an explanation for this policy, the corporations argued that it was necessary to conceal from competitors the vital data concerning their businesses. From the investor's point of view, however, it seemed only just that he should have accurate information about an enterprise to which he had committed or contemplated committing his money.

In September, 1926, W. Z. Ripley, in a scathing article in the *Atlantic Monthly*,⁵ directed attention to the tactics used by corporations in rendering reports to stockholders, and he supported his contentions by citing extracts from the statements of many important corporations. He concluded with the suggestion that an agency of the Federal Government "address itself vigorously to the matter of adequate and intelligent corporate publicity." This seed, undoubtedly aided by the stock market crash of 1929, brought forth fruit some years later in the form of the Securities and Exchange Commission.

The Securities and Exchange Commission

The Securities Exchange Act of 1934 created the Securities and Exchange Commission, which administers this Act as well as

³ In the report for 1959.

⁴ Published by the American Institute of Certified Public Accountants.

⁵ Reprinted in the collection of essays titled *Main Street and Wall Street*, Chapter VI. Boston: Little, Brown & Co., 1927.

the Securities Act of 1933 (in lieu of the Federal Trade Commission, which originally administered it), the Public Utility Holding Act of 1935, and subsequent legislation, including the Investment Company Act of 1940

The Securities Exchange Act of 1933 requires a registration statement and a prospectus to be filed for all new issues of securities to be sold in a public market, with certain exemptions. The Securities Exchange Act of 1934 requires additional reports, including annual reports. It is the annual reports, Form 10-K, which are usually of greatest interest to the analyst, particularly the financial statements with supporting schedules contained therein.

Financial statements included in the reports submitted to the Securities and Exchange Commission must be prepared in accordance with the Commission's *Regulation S-X Form and Content of Financial Statements*. The analyst should familiarize himself with its contents as well as the Commission's *Accounting Series Releases*.

The work of the Securities and Exchange Commission has been summarized by that body in the following words:

The examination of registration statements does not involve an appraisal of and is not concerned with the merits of the security as an investment. The Commission does not pass judgment upon the soundness of any security. The basic policy is that of informing the investor of the facts concerning securities to be offered for sale in interstate and foreign commerce, and the aim is to place adequate and true information before the investor and to prevent the sale of securities through misrepresentation—perhaps the only way in which fraudulent securities can be sold to the public. The Commission's further aim is to accomplish this with the least possible interference to honest business.⁶

Although the Securities and Exchange Commission has no jurisdiction over the form of annual reports submitted to stockholders, corporations tend to make them follow the reports submitted to the Commission, for any material discrepancy between the two would be regarded unfavorably by the public. As a result, the practice followed in preparing reports for the Commission has tended to become standard accounting practice, just as the form suggested by the Federal Reserve Board in 1918 for credit purposes was more or less generally followed by accountants and by writers of textbooks on accounting. Thus the Securities and Ex-

⁶ First Annual Report of the Commission, June 30, 1935, page 27.

change Commission has had a signal influence on accounting procedure tending toward better financial statements.

The Income Statement: (1) Terminology

The shifting of attention from the matter of a series of positions of a business, in the balance sheet, to the stream of its activity, in the income statement, has resulted in important developments with respect to the terminology, scope, and form of the income statement.

The term *profit* is a survival of the days when all business was conducted by means of small-scale enterprises. It was feasible then to compute the result of each transaction or "venture" and to list the various profits and losses in a "profit and loss" statement. However, the complexities of modern business usually involve many types of gains and losses, and this fact makes necessary a broader concept of what constitutes the result of the conduct of the business. It also requires a more comprehensive term to describe this result, and so *net profits* has tended to be superseded by *net income*. The adoption of this term has also been influenced by its use in income taxation.

There is a noticeable trend toward the use of the term *revenue* when referring to the accretion through sale of goods or performance of services, the term *income* being employed to indicate both the revenue and the income from other sources. As a result, the expression *gross income* is used less frequently than formerly.

In recognition of the fact that a business cannot be said to have realized any gain until not only the cost of goods or services sold but all appropriate deductions have been subtracted from revenue, accountants have tended to discard the term *gross profit*. However, since in a mercantile business the difference between the sales revenue and the cost of the goods sold does in some instances provide a figure which has value for managerial purposes, some who make use of this figure designate it *gross margin* rather than *gross profit*.

The word *earnings* is usually used as a synonym for *net income*.

The broader concept of *net income* has had its effect on the name of the statement. Although the title *profit and loss statement* is still in use, this has to a very large extent been superseded by that of *income statement*.

(2) Scope

It was held in times past that non-recurring, extraordinary, or capital gains and losses—such as, for example, loss through fire or flood and the gain or loss on sale of securities or fixed assets—should be carried to the Surplus account and not shown in the income statement. This statement was restricted to matters connected with the regular operation of the business, in order that its final figure, unaffected by extraneous factors, might be used in making comparisons of the result of operations from period to period.

In recent years there has been in most quarters a marked expansion of the scope of the income statement to include not only the items connected with the regular operation of the business but also the unusual items, which were formerly not included. This is the result to be expected of the more comprehensive concept of net income as embracing all matters causing a change in capital, other than earnings distributions and capital transactions. It has been called the "all-inclusive" basis, in contrast with the more restricted one known as the "current operating performance" basis.

There has also been an expansion of the scope of the income statement in the matter of provisions for anticipated costs and losses. The making of provision for anticipated losses on uncollectible accounts has long been an established part of accepted procedure. Similar practice has developed with respect to foreseeable costs, such as the estimated cost of carrying out warranties, and anticipated losses in such matters as foreign exchange and workmen's compensation claims and wage adjustments. Provision for such items is made in a manner similar to that for bad debts, that is, by a deduction from revenue, shown in the income statement, and the listing of the estimated liability in the balance sheet.

The objection that the unusual gains and losses destroy the comparability of the income statement from period to period is overcome by classifying these items in appropriate sections. When included in the statement, the question arises whether they should appear before or after the "net income" figure. In this respect the accountant uses his discretion and does not include them in the

determination of net income if their inclusion would impair the significance of this figure

When the unusual items are displayed in the income statement after the determination of net income, the final figure will be given an appropriate description, such as "carried to surplus" or "net income and special items"

The computation of "earnings per share" is a popular one, particularly in the investment field. This computation should obviously be based on the figure designated as "net income." However, such earnings figures should be used with caution, since they are not an absolute measure, depending as they do on the accountant's discretion. In cases where the amount of the "special items" is material, it would be well to compute the "earnings per share" on both the net income and the "net income and special items."

It should be noted that the accountant's choice in the matter of including or not including unusual items in the determination of net income, causes no difficulty to the analyst if there is a full disclosure of the facts. In cases where the analyst's opinion does not coincide with that of the accountant who prepared the statements, the analyst will rearrange the statements to suit his purposes.

(3) Form

The traditional income statement form consists of several steps. From the net sales, also called "gross income," there is deducted the cost of the goods or services sold to produce a subtotal called by some the "gross profit." From this figure, the selling, general, and administrative expenses are deducted, yielding a subtotal to which is added other income, giving another subtotal from which income deductions are subtracted, resulting in still another subtotal, and so forth. The subtotal at each step is commonly given a title.

Not only the subtotal titles "gross income" and "gross profit" are unsatisfactory, but likewise designations such as "net profit on sales" and those including the word "operating," such as "gross operating profit" and "net operating profit," leave something to be desired, since there exists little agreement as to what the word "operating" shall comprise. The subtotals usually have no clearly

INCOME	
Sales, after deducting \$750,492 discounts, returns, and allowances	\$42,937,450
Dividends	20,685
Interest on securities, notes, and accounts	92,760
Royalties	75,000
Refunds of prior years' federal taxes and interest thereon	17,295
Miscellaneous	25,427
	<u>\$43,168,617</u>
DEDUCTIONS FROM INCOME	
Cost of goods sold (including \$1,389,528 depreciation)	\$25,349,654
Selling, general, and administrative expenses (including \$875,250 depreciation)	4,389,628
Interest on first-mortgage bonds	185,000
Amortization of bond discount	75,280
Other interest	5,276
Loss on property disposals (net)	24,347
Provision for federal income tax	5,125,000
	<u>\$35,154,185</u>
Net income for the year	<u><u>\$ 8,014,432</u></u>

Fig 9 "Single-step" Income Statement

defined significance and are subject to such great differences in interpretation that they tend to confuse rather than enlighten the reader

In order to overcome this defect of the traditional or "multiple-step" form of income statement, a considerable number of enterprises have adopted the "single-step" form. This consists of, first, a display of all kinds of income, whether from the regular operation of the business or from extraneous sources. Then follows a second part showing all forms of deductions from income: the cost of the goods or services sold, selling, general, and administrative expenses, special deductions, and, finally, the federal income tax. In a single step the total of the deductions is subtracted from the income, the difference being the net income. The "single-step" arrangement, by eliminating the possibly misleading subtotals, allows the reader to make his own combinations of figures from which to draw his conclusions.

The form of the "single-step" income statement is illustrated in Figure 9.

The Retained Earnings (Surplus) Statement

The trend toward the expansion of the scope of the income statement has had the effect of a contraction of the scope of the

surplus statement of times past. The more limited scope of the contemporary Retained Earnings account, as the name implies, and the statement corresponding thereto, has been called in accounting literature the "clean surplus."

Under the "clean surplus" procedure, the Retained Earnings account contains few items other than the credits for net income (or debits for net losses), debits for the dividends declared, and adjustments of the income of prior years, the most usual of which are in connection with depreciation and taxes. What other items are carried to the Retained Earnings account are those "special items" which in the opinion of the accountant are not to be included in the determination of net income. Among these the most usual are costs and gains in connection with the issue and redemption of capital stock. Since there are differences in opinion in this matter, the number of such items included in Retained Earnings will vary from corporation to corporation. It should be mentioned, however, that a scrutiny of contemporary statements will reveal a definite trend toward having very few items in the retained earnings statement.

Combined Statement of Income and Surplus

The question concerning the treatment of the "special items," that is, whether they shall be shown in the income statement after the determination of the net income or in the surplus statement, has been avoided by some corporations through the use of a combined statement of income and surplus. This statement contains the data of the income statement and, in addition, after the determination of the net income, continues by adding to this the retained earnings (surplus) at the beginning of the period, adds or subtracts the "special items," proceeds to deduct the dividends declared, and ends with the retained earnings at the end of the period as shown in the balance sheet.

Capital Surplus

The trend is toward the complete abolition of the word *surplus* in financial statements, not only in the case of earned surplus but also with respect to capital surplus. Instead of combining into one item the various kinds of capital increments other than those

obtained by issue of capital stock or through earnings, the newer procedure is to list each type with appropriate description. Accordingly, a premium on stock is given such a title as "Excess of consideration received over par value of stock issued," and in the case of a paid-in surplus on no-par stock with stated value, the title is one such as "Excess of consideration received over stated value of stock issued."

Following this procedure, there are such items as "Increment arising through retirement of preferred stock," "Excess of conversion price over par value of common stock issued on conversion of preferred stock," and, in the case of the so-called "negative goodwill" in consolidated statements "Excess of net assets at date of acquisition over cost of investment in subsidiary," and so forth.

Reserves

There probably has been more confusion concerning reserves than about any other matter in the entire field of accounting. One of the causes of the confusion is that the word *reserve* has been used to signify three different things: (1) appropriations of retained earnings (surplus), (2) accumulated depreciation, and (3) anticipated losses and costs. The confusion has been alleviated, however, because accountants have taken steps to differentiate the three types of items designated as *reserves* by giving them different titles.

(1) Appropriation of Retained Earnings (Surplus)

The board of directors of a corporation may at its discretion reduce the amount of retained earnings available for dividend purposes. Such reduction is recorded by a transfer from the Surplus account to a Reserve account, which is given an appropriate title according to the purpose of the reservation of earnings, such as "Reserve for Plant Improvement" or "Reserve for Working Capital." The best practice does not sanction the creation of reserves without a specific purpose, thus, "general purpose" reserves, such as the Reserve for Contingencies, are tending to fall into disuse.

Surplus is sometimes restricted for contractual reasons, such as the requirements of a bond indenture which stipulates that a

reservation of retained earnings be made over the life of a bond issue by the establishment of a Sinking Fund Reserve—a procedure sometimes met with in the case of railroads. Also, restrictions of retained earnings are in certain instances required by law, as, for example, the restriction imposed on national banks by the National Bank Act, and the requirement of some foreign governments that a certain portion of all corporate earnings be permanently retained, which affects the consolidated statements of American corporations with foreign subsidiaries.

Reservation of retained earnings has no material effect on the accounting. Nor does it exercise any control over the disposition of funds, so that it does not necessarily follow from the creation of a reserve that the business will have funds available to take care of the eventuality for which the reservation was made. The reserve is but a memorandum which indicates that the retained earnings available for dividend purposes have been temporarily reduced. However, the reservation may not reduce the amount of dividends paid, since there may still be sufficient surplus available to continue paying the accustomed rate. If it is desired to pay smaller dividends, this can be achieved simply by declaring less. Surplus reserves are, therefore, quite unnecessary except when required for contractual or legal reasons. In recent times there has been a marked decline in the number of surplus reserves in balance sheets.

There is a tendency among accountants to limit the use of the word *reserve* to designate surplus restrictions and to discontinue its use to describe the two other types of items for which the term has been used. Some accountants are even inclined to abolish the use of the term entirely and to indicate the restriction of retained earnings in the notes appended to the statements.

(2) Accumulated Depreciation

In the matter of showing the accumulated depreciation of fixed assets in the balance sheet, the title "Reserve for depreciation" has been to a large extent superseded by that of "Allowance for depreciation," and there is a strong tendency to omit the word *allowance*, merely indicating the item with such a title as "Depreciation to date," "Accumulated depreciation," or "Amortization to date."

(3) Anticipated Losses and Costs

It is an accepted principle of accounting that provision should be made by means of a deduction from the revenue of each period for all foreseeable losses and costs which can reasonably be allocated to that period. A good illustration of this is the provision for anticipated loss on bad debts. This provision is made because the loss is foreseeable on the basis of experience and can reasonably be allocated to the period in which the amount estimated to be uncollectible was included in revenue. As in the case of depreciation, the tendency is for the word *reserve* to be replaced by *allowance* in the title of the bad debts estimate, but some accountants simply give the item such a title as "Estimated uncollectibles."

Deduction is also made from revenue for other anticipated losses, such as loss on investments, loss on cash in closed bank, and loss caused by destruction of properties in theaters of war. The estimated loss continues to be deducted from the asset in the balance sheet, with an appropriate title, such as "Estimated loss," but without the use of the word *reserve*. In these matters the allocation of the loss to the revenue of a certain period is not so clear as in the case of the loss on uncollectible accounts.

Provision is often made for anticipated losses by fire, flood, or pilferage, where these are common occurrences. The allocation to revenue under such circumstances is based on past experience modified by opinion concerning the future, and there is a great degree of latitude. Because it is not known in advance which assets will be affected by these losses, the provision cannot be deducted from specific assets in the balance sheet, and it is listed as a *liability reserve* or *estimated liability*, which is in the nature of a contra to the assets.

Among these reserves are also included anticipated costs in connection with current or past operations, also provided for by deductions from revenue. These are deducted in connection with such matters as product warranties, employee benefits, and assessment for income taxes of prior years. Some of the items of this type found in balance sheets are open to considerable question, and it is obvious that this phase of accounting will require further clarification.

Although anticipated losses and costs may be deducted from revenue in the computation of the accounting net income, none but that for bad debts is usually deductible for income tax purposes. Therefore, there is usually a difference between the accounting net income and taxable net income of enterprises making these provisions.

Cost of Goods or Services Sold

In times past, one of the outstanding defects in financial statements was the omission from the income statement of the cost of goods or services sold, this figure having been combined with the selling and administrative expenses and deducted from the sales to show the "net operating profit." A statement so arranged does not provide sufficient details for interpretation. What is needed is a statement showing separate figures for cost of goods or services sold and for the selling and administrative expenses, in order that each of these factors may be studied. In recent times it has become customary to show the cost of goods or services sold, probably under the influence of the regulations of the Securities and Exchange Commission, which require that statements submitted to the Commission give this information.

Depreciation in the Income Statement

In a manufacturing enterprise the depreciation falls into two categories: (1) that portion which is a selling and administrative expense, and (2) that portion which is a part of the manufacturing cost. There are two methods commonly found in practice of showing the two divisions of depreciation in the income statement: (1) the depreciation is shown in total and the distribution to cost of goods sold and selling and administrative expense is stated parenthetically or in the notes appended to the statements, (2) the depreciation is included in the figures for cost of goods or services sold and the selling and administrative expenses, and the amount of depreciation included therein is stated parenthetically after each item, or in the notes or schedules.⁷

⁷ For example, Schedule XVI of Form 10-K filed with the Securities and Exchange Commission.

Cash Discounts in the Income Statement

The older point of view with respect to cash discounts on sales is to regard them as a form of expense which the business incurs in order to get money from its customers quickly. Following this line of reasoning, discounts on purchases are considered a form of income as the result of the ability of the business to make payments promptly. The newer point of view is that, since every well-regulated business takes advantage of cash discounts, as a matter of course, on account of the great saving that results, they should be regarded in the nature of reductions in the sales prices. In similar manner, the purchase discounts are regarded as constituting a reduction of the price of the goods purchased.

From the older point of view, the sales discounts are included in the income statement as a selling expense and the purchase discounts as "other income." The newer procedure is to deduct sales discounts from the sales revenue, and this procedure has become the most common. With respect to purchase discounts, the newer procedure is to deduct them from the cost of the purchases. However, a considerable number of enterprises follow the older method, probably for reasons of expediency in cost accounting.

Balance Sheet Title

Although attention has shifted to the income statement, this does not mean that the balance sheet has lost its importance as the statement which summarizes the status of the accounting. The balance sheet still remains an important summary to the management, current creditors, investors, and others.

Accountants have attempted to minimize the importance of the balancing feature of the statement and to emphasize the function of the statement of giving information regarding the position of the assets, the liabilities, and the proprietary equity. There accordingly exists a strong tendency to abandon the title *balance sheet* and to call the statement the *position statement*. This title is in harmony with that of *income statement* and so tends to indicate the complementary nature of the two statements.

Balance Sheet Form

There is a trend away from the traditional form of neat balance to a form which strives to show more clearly both the current or working capital position and the position, in the case of corporations, of the stockholders' investment in the enterprise. This form has been commonly called the *position statement* or *statement of financial position*, although these titles are just as suitable for the traditional form. The new arrangement is a vertical one which

CURRENT ASSETS			
Cash		\$	6,425
Accounts receivable	\$67,348		
Less Estimated bad debts	<u>673</u>		66,675
Inventory			125,430
Prepaid expenses			<u>1,278</u>
Total current assets			\$199,808
LESS—CURRENT LIABILITIES			
Accounts payable		\$	60,938
Dividends payable			16,000
Accrued expenses			2,136
Federal income tax payable			<u>5,350</u>
Total current liabilities			84,424
Working capital			\$115,384
PROPERTY, PLANT, AND EQUIPMENT			
Land		\$	30,000
Building	\$70,000		
Less Depreciation	<u>15,500</u>		54,500
Furniture and equipment	\$50,275		
Less Depreciation	<u>17,650</u>		32,625
Delivery trucks	\$15,000		
Less Depreciation	<u>4,380</u>		<u>10,620</u>
Total property, plant, and equipment			127,745
Total assets, less current liabilities			\$243,129
LESS—LONG-TERM DEBT			
Mortgage on building			<u>8,000</u>
Excess of assets over liabilities (stockholders' investment)			<u>\$235,129</u>
REPRESENTED BY			
Capital stock (Par, \$100)			
Authorized, 5,000 shares			
Issued and outstanding, 2,000 shares			\$200,000
Retained earnings			<u>35,129</u>
			<u>\$235,129</u>

Fig. 10 "Position Statement."

starts with the current assets, from which are deducted the current liabilities to determine the working capital. To the working capital are added the other assets to arrive at a subtotal from which are subtracted any noncurrent liabilities, the remainder being given such a title as "Excess of assets over liabilities" or "Stockholders' equity." Then follows another section which shows how the stockholders' equity is represented, that is, the capital stock, retained earnings, and so forth. The total of this section will check with the total of the section which precedes. This form is illustrated in Figure 10.

It is not unlikely that the term *position statement* will supersede that of *balance sheet*. However, the title *balance sheet* still remains the most usual in practice.

Prepaid Expenses and Deferred Charges

It has been found troublesome to distinguish between prepaid expenses and deferred charges. Both represent costs to be assigned to future revenue. In fact, the terms are mutually inclusive: both types of items are prepaid or deferred, and both are expenses or charges. For practical purposes, however, the distinction can easily be made. The term *prepaid expenses* is usually used to designate the more or less regularly recurring items in connection with operations, such as insurance, supplies, rent, taxes, interest, and so forth, while the term *deferred charges* is generally applied to the more unusual items, such as organization expense and bond discount.

During the 1930's and into the 1940's, the trend was to make no distinction between prepaid expenses and deferred charges and to classify them as noncurrent. However, in August, 1947, *Accounting Research Bulletin No. 30* of the American Institute of Certified Public Accountants revived the distinction by recommending that the prepaid expenses be separated from the deferred charges and classified as current assets. The effect of this bulletin was to start a trend toward placing the prepaid expenses in the current asset section of the balance sheet and retaining the deferred charges in a separate section among the noncurrent assets. Many enterprises, however, continue not to observe the distinction and to classify both types of items as noncurrent.

Intangible Assets

The intangible asset goodwill, which is not regularly subject to amortization, is stated in the balance sheet at cost or at an arbitrarily reduced figure, while the intangible assets subject to amortization, such as patents and copyrights, are stated at cost less amortization to date. The stated amount does not provide a satisfactory measure, since the importance to the business of an intangible asset is usually measurable only in terms of its income-producing ability. Accounting, however, provides no method for adjusting the stated amount to reflect income-producing ability.

For example, a patent which cost very little may be the source of large income, and, *vice versa*, one which cost huge sums may provide little income. Goodwill is on a still more arbitrary basis, particularly corporate goodwill, which usually is paid for, not in cash, but in shares of capital stock.

Since the goodwill figure conveys no usable information to the reader of the balance sheet, the trend is to avoid showing it, the usual method of elimination being to write it off against retained earnings. Where goodwill has been written off, its listing is sometimes continued at the nominal figure of \$1.

The intangibles offer no difficulty to the analyst, because, for the reasons here given, it has become standard practice to disregard their stated amounts in the analysis of financial statements in order to avoid the possibility of erroneous conclusions. The analyst deducts such amounts from the assets and from the proprietary equity.

Treasury Stock

Before the advent of no-par stock, treasury stock was conveniently carried at par and in the balance sheet was deducted from the total of stock issued to arrive at the capital stock outstanding. It became difficult, however, to apply this method to no-par stock when the stock had been sold at different prices. Also, the enactment of laws relative to stated or legal capital made it desirable to indicate the stated capital in the balance sheet, and, since treasury stock is part of the stated capital, the net after deduction of the treasury stock would be a figure less

than the stated capital. This complication has caused a trend, in the case both of par and of no-par stock, toward carrying treasury stock at cost and showing it in the balance sheet as a deduction from the total of the capital stock and surplus. The cost basis is also more satisfactory since, where the law places a restriction on the surplus as a result of purchase of shares for the treasury, the restriction would be the amount paid for the stock.

One still occasionally finds treasury stock listed as an asset. This is most unsatisfactory, since a corporation does not acquire an asset when some of its own stock is reacquired by it, the result is merely a reduction of the stock outstanding. Showing treasury stock as an asset is sometimes defended on the ground that it is held for sale, but the same might be said of unissued stock.

Depreciation Methods Different for Accounting and Tax Purposes

An increasing number of corporations use one method of depreciation for accounting purposes and another for tax purposes, as when the straight-line method is used for accounting and the sum-of-the-years'-digits method for computing the federal income tax. The initial effect of this procedure is that the federal income tax is reduced. The amount of this reduction is shown in the balance sheet as a deferred credit which will be written off to income in later years when by the accelerated method the depreciation will be less than that of the straight-line method and the federal income tax thus increased.

Notes to the Financial Statements

The information contained in the financial statements is limited to what is recorded in the books of account, in accordance with conventional accounting procedure. But the users of the statements usually require additional information which supplements that recorded in the traditional statements. Certain information of this type is required to be submitted in the form of notes appended to the statements filed with the Securities and Exchange Commission, and the requirements of the Commission have set an example which is more and more coming into use by corporations in submitting reports to stockholders.

Notes to the balance sheet are required by the Securities and Exchange Commission concerning (a) assets subject to lien, (b) intercompany profits and losses affecting balance sheet items, (c) defaults with respect to any issue of securities or credit agreements, (d) preferred shares if callable and, if so, when, arrears in cumulative dividends, preference on involuntary liquidation, (e) pension and retirement plans, (f) restrictions which limit the availability of surplus for dividend purposes, and (g) contingent liabilities. The Commission requires notes to the income statement with respect to (a) instalment or deferred sales, (b) intercompany profits and losses, and (c) depreciation, depletion, obsolescence, and amortization accounting treatment for maintenance, repairs, renewals, and betterments and adjustment of accumulated reserves. Where consolidated statements are used, there are required statements as to principle of consolidation and to reconciliation of investment of parent in subsidiaries with equity of parent in net assets of subsidiaries.

The analyst should consider these notes an integral part of the statements, and he will find them a helpful supplement to the data contained in the statements.

Contingent Liabilities

In the past it was held that surplus reserves should be created for contingent liabilities such as, for example, lawsuits pending against the business. The trend, however, has been toward showing contingent liabilities in the notes appended to the balance sheet. Such notes are found with respect to lawsuits, purchase commitments, taxes, commercial paper, guaranties, subsidiary indebtedness, and other matters.

The explanation of a contingent liability in narrative form is of greater value to the reader of the statements than the mere notation of a restriction of retained earnings. In the case of lawsuits, for instance, it is customary to give a brief statement of the nature of the action and counsel's opinion as to the possible effect on the position of the business.

Corporate Annual Reports

In recent years the annual reports of large corporations have changed from formal, technical documents to attractive and in-

interesting reading matter. Instead of being directed merely to stockholders, the modern reports are also prepared to interest employees and the general public. In fact, they constitute part of a company's public relations program. The reports contain not only financial statements and other statistics, but also stories with respect to the company's activities, often profusely illustrated in color. These reports have become an important part of business literature, and various books have been written concerning them.⁸

Because of the fact that a large portion of the readers of the corporate annual reports have not had the necessary technical accounting training to enable them to interpret the formal financial statements, a considerable number of companies have adopted various types of simplified statements. These range from statements in the traditional form, but with the various items described in nontechnical language, to statements which tabulate various selected statistical facts but without any balancing or totaling.

The analyst sometimes obtains valuable information from the company annual reports concerning production, employee relations, plans for the future, and other matters not available in the accounting statements.

⁸ As examples the reader is referred to American Management Association, *Preparation of Company Annual Reports*, Research Report No. 10, prepared by Ernest Dale, New York, 1946; N. Loyall McLaren, *Annual Reports to Stockholders*, New York: The Ronald Press Company, 1947; Lillian Doris, *Modern Corporate Reports*, Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1948; and Thomas H. Sanders, *Company Annual Reports*, Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1949.

Comparison of Balance Sheets

✓ Scrutinizing the Statements

The first step in the work of the analyst is to scrutinize the statements to be analyzed in order to determine whether the data contained therein are arranged in accordance with his views and to suit his purpose. For, as has been shown, in arranging the statements the accountant may choose from among various acceptable alternatives. To illustrate, prepaid expenses are listed in the balance sheet by some accountants as current assets and by others as noncurrent, and in the income statement purchase discounts are by some deducted from the cost of goods sold while by others they are listed under "other income." As will be seen from this chapter and from those which follow, the grouping of the data will affect the conclusions derived from the analysis. Therefore, if in a particular case the analyst prefers arrangements different from those used by the accountant who prepared the statements, he should feel free to recast the statements, provided that the changes he makes are within the range of acceptable alternatives.

✓ The Comparative Balance Sheet

The effects of the conduct of a business are reflected in its balance sheet by increases and decreases in the various assets and liabilities and in the proprietary equity or capital.¹ These changes

¹ In the past, various writers have called the proprietary equity the *net worth*. This term is now falling into disuse because it implies that a balance sheet shows what a business is worth. The expression *net worth* is not only misleading but unnecessary, since the word *capital* is the proper technical accounting term for the designation of the proprietary equity. In the case of a corporation, the capital may consist of several elements, such as the capital stock issued and outstanding and the retained earnings. The term *net worth* is not used in this book.

can be observed by a comparison of the balance sheets at the beginning and end of a period, and such observation often yields a considerable amount of information which is of value in forming an opinion regarding the progress of the enterprise. To facilitate comparison, a simple device known as the *comparative balance sheet* may be used.

From the balance sheets of The B Corporation as of December 31, 1959, and December 31, 1960, illustrated in Figures 11 and 12, the comparative balance sheet shown in Figure 13 has been

THE B CORPORATION

Balance Sheet

December 31, 1959

Assets

CURRENT ASSETS		
Cash		\$ 6,468
Marketable securities		21,500
Accounts receivable (customers)	\$48,526	
Less Allowance for doubtful accounts	<u>950</u>	47,576
Merchandise inventory		69,935
Prepaid expenses		<u>1,185</u>
Total current assets		\$146,664
FIXED ASSETS		
Land		\$24,000
Building	\$42,965	
Less Allowance for depreciation	<u>6,362</u>	36,603
Furniture and fixtures	\$18,230	
Less Allowance for depreciation	<u>2,873</u>	15,357
Total fixed assets		75,960
DEFERRED CHARGES		
Organization expense		<u>2,400</u>
		<u>\$225,024</u>

Liabilities and Capital

CURRENT LIABILITIES		
Notes payable	\$ 2,725	
Accounts payable	15,064	
Accrued taxes and other expenses	<u>3,186</u>	
Total current liabilities		\$20,975
FUNDED DEBT		
First-mortgage bonds	<u>50,000</u>	
Total liabilities		\$ 70,975
CAPITAL STOCK		
Common stock (Par \$100)		150,000
RETAINED EARNINGS		
		<u>4,049</u>
		<u>\$225,024</u>

Fig 11.

THE B CORPORATION

Balance Sheet

December 31, 1960

Assets

CURRENT ASSETS*			
Cash			\$11,826
Notes receivable (customers)			153
Accounts receivable (customers)	\$60,193		
Less Allowance for doubtful accounts	<u>1,825</u>	58,368	
Merchandise inventory		88,517	
Prepaid expenses		<u>1,625</u>	
Total current assets			\$160,489

FIXED ASSETS

Land		\$30,000	
Building	\$56,250		
Less Allowance for depreciation	<u>8,450</u>	47,800	
Furniture and fixtures	\$27,143		
Less Allowance for depreciation	<u>5,070</u>	22,073	
Delivery equipment	\$ 6,500		
Less Allowance for depreciation	<u>1,350</u>	<u>5,150</u>	
Total fixed assets			105,023

DEFERRED CHARGES

Organization expense		1,200	
		<u>\$268,712</u>	

Liabilities and Capital

CURRENT LIABILITIES

Notes payable	\$ 1,500		
Accounts payable	20,156		
Accrued taxes and other expenses	<u>12,465</u>		
Total current liabilities		\$34,121	

FUNDED DEBT

First-mortgage bonds	<u>30,000</u>		
Total liabilities.		\$ 64,121	

CAPITAL STOCK

Common stock (Par \$100)		180,000	
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RETAINED EARNINGS

22,591	
<u>\$268,712</u>	

Fig 12.

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constructed The form consists of two columns for the data of the original balance sheets and a third column for the increases and decreases in the various items. A fourth column, containing the percentages of increase and decrease, may be added, as illustrated

THE B CORPORATION
Comparative Balance Sheet
December 31, 1959 and 1960

	<u>December 31</u>		<u>Increase—Decrease*</u>	
	<u>1960</u>	<u>1959</u>	<u>Amount</u>	<u>Per Cent</u>
<i>Assets</i>				
CURRENT ASSETS				
Cash	\$ 11,826	\$ 6,468	\$ 5,358	82.9
Marketable securities	—	21,500	21,500*	100.0*
Notes receivable (customers)	153	—	153	—
Accounts receivable (customers)	60,193	48,526	11,667	24.1
Merchandise inventory	88,517	69,935	18,582	26.5
Prepaid expenses	1,625	1,185	440	37.1
	<u>\$162,314</u>	<u>\$147,614</u>	<u>\$ 14,700</u>	<u>10.0</u>
Less Allowance for doubtful accounts	1,825	950	875	92.1
Total current assets	<u>\$160,489</u>	<u>\$146,664</u>	<u>\$ 13,825</u>	<u>9.4</u>
FIXED ASSETS				
Land	\$ 30,000	\$ 24,000	\$ 6,000	25.0
Building	56,250	42,965	13,285	31.0
Furniture and fixtures	27,143	18,230	8,913	40.9
Delivery equipment	6,500	—	6,500	—
Cost of fixed assets	<u>\$119,893</u>	<u>\$ 85,195</u>	<u>\$ 34,698</u>	<u>40.7</u>
Less Allowances for depreciation				
Building	\$ 8,450	\$ 6,362	\$ 2,088	32.8
Furniture and fixtures	5,070	2,873	2,197	76.5
Delivery equipment	1,350	—	1,350	—
Total Allowances	<u>\$ 14,870</u>	<u>\$ 9,235</u>	<u>\$ 5,635</u>	<u>61.0</u>
Book value of fixed assets	<u>\$105,023</u>	<u>\$ 75,960</u>	<u>\$ 29,063</u>	<u>38.2</u>
DEFERRED CHARGES				
Organization expense	1,200	2,400	1,200*	50.0*
	<u>\$266,712</u>	<u>\$225,024</u>	<u>\$ 41,688</u>	<u>18.5</u>
<i>Liabilities and Capital</i>				
CURRENT LIABILITIES				
Notes payable	\$ 1,500	\$ 2,725	\$ 1,225*	45.0*
Accounts payable	20,156	15,064	5,092	33.8
Accrued taxes and other expenses	12,465	3,186	9,279	290.9
Total current liabilities	<u>\$ 34,121</u>	<u>\$ 20,975</u>	<u>\$ 13,146</u>	<u>62.7</u>
FUNDED DEBT				
First-mortgage bonds	30,000	50,000	20,000*	40.0*
Total liabilities	<u>\$ 64,121</u>	<u>\$ 70,975</u>	<u>\$ 6,854*</u>	<u>9.7*</u>
CAPITAL STOCK				
Common stock (Par \$100)	180,000	150,000	30,000	20.0
RETAINED EARNINGS				
	<u>22,591</u>	<u>4,049</u>	<u>18,542</u>	<u>462.5</u>
	<u>\$266,712</u>	<u>\$225,024</u>	<u>\$ 41,688</u>	<u>18.5</u>

Fig 13.

The single balance sheet shows the balances of the accounts after closing the books as of a certain date. The comparative balance sheet shows not only the balances of the accounts as of different dates but also the extent of their increases or decreases between these dates. While in the single balance sheet the emphasis is on status, in the comparative balance sheet it is on change. The changes are the result of operations, the conversion of asset, liability, and capital forms into others, and the various interactions among assets, liabilities, and capital.

Although the balance sheet is a useful statement, the comparative balance sheet is even more useful, for it contains not only the data of the single balance sheets but also those which may be used in studying the trends in an enterprise. Information regarding trends that indicate the direction in which a business is headed is usually more significant to the analyst than that concerning book values of assets and liabilities.

The income statement presents a review of the operating activities of a business, the comparative balance sheet shows the effect of operations on its assets and liabilities. Thus the comparative balance sheet contains a connecting link between the balance sheet and the income statement.

Percentages of Increase and Decrease

Not only the absolute changes, in terms of dollars, in the comparative balance sheet, but also the relative changes, in percentages or rates of change, should be studied. The relative changes are important to the analyst. When he observes, for instance, that the current assets of The *B* Corporation have increased \$13,825 and the current liabilities have increased \$13,146, this information becomes more significant to him if the changes are also stated in terms of percentages—that is, if it is stated that the current assets have increased 94%, whereas the current liabilities have increased 62.7%. In fact, on the basis of the information regarding relative change, the analyst might considerably modify an opinion based on dollars of change. In the case under consideration, the dollars of current assets increased more than the dollars of current liabilities, but in terms of percentage the increase was much greater in the current liabilities.

In the computation of percentages it should be noted that, if a certain item has a value in one year and none in the next, as in the case of The *B* Corporation's marketable securities, the percentage of decrease is 100%. However, if an item has no value in the first year and has a value in the second, as in the case of the notes receivable, no percentage can be shown, because, if a number is divided by zero, the quotient is infinity.

Comparative Balance Sheet for More Than Two Dates

Comparative balance sheets may be prepared for more than two dates. Figure 14 illustrates the comparative balance sheet of The *B* Corporation as of December 31, 1958, 1959, and 1960. The method used in the illustration becomes cumbersome when more years are added. For the study of trends over a period of years another method, which is described in Chapter 10, is used.

Statement Accounting for Variation in Capital

Although the comparative balance sheet directs attention to the financial changes in a business, it does not summarize them in such a manner as to show their effect on the enterprise. This is a case in which the old adage about not being able to see the woods on account of the trees might be applied. A statement of the changes between the two balance sheet dates in classified form is helpful in studying the dynamics of the business. Such an arrangement is shown in Figure 15, which illustrates a statement accounting for the variation in the capital of a business.

The changes in the asset and liability accounts may be classified as either increasing or decreasing capital. Increases in assets and decreases in liabilities cause an increase in capital, while decreases in assets and increases in liabilities result in a decrease in capital. (These changes may be tabulated as in Figure 15.) The change in capital is the difference between the increases and the decreases, and this change is accounted for by the total of the changes in the items composing capital.

It should be borne in mind that the changes discussed here are the net resultants of the countless transactions that have occurred

THE B CORPORATION
Comparative Balance Sheet
December 31, 1958, 1959, and 1960

	Increase—Decrease*			
	Amount			Per Cent
	1960	1959	1960	1959
<i>Assets</i>				
<i>CURRENT ASSETS</i>				
Cash	\$ 11,826	\$ 6,468	\$ 10,250	\$ 5,353
Marketable securities	—	21,560	15,000	21,560*
Notes receivable (customers)	153	48,526	57,580	11,667
Accounts receivable (customers)	60,193	69,935	70,260	18,582
Merchandise inventory	88,517	1,185	1,350	440
Prepaid expenses	1,625	1,185	1,350	440
	<u>\$162,314</u>	<u>\$147,614</u>	<u>\$160,630</u>	<u>\$14,700</u>
Less Allowance for doubtful accounts	1,825	950	1,250	875
Total current assets	<u>\$160,489</u>	<u>\$146,664</u>	<u>\$159,380</u>	<u>\$13,825</u>
<i>FIXED ASSETS</i>				
Land	\$ 30,000	\$ 24,000	\$ 24,000	\$ 6,000
Building	56,250	42,965	45,500	13,285
Furniture and fixtures	27,143	18,230	20,248	8,913
Delivery equipment	6,500	—	—	6,500
Cost of fixed assets	<u>\$119,893</u>	<u>\$85,195</u>	<u>\$89,748</u>	<u>\$34,098</u>
				<u>\$ 4,553*</u>

Fig 14

Less Allowances for depreciation	\$ 8,450	\$ 6,362	\$ 4,155	\$ 2,088	\$ 2,207	42.5	53.1
Buildings	5,070	2,873	1,850	2,197	1,023	76.5	55.3
Furniture and fixtures	1,350	—	—	1,350	—	—	—
Delivery equipment	—	—	—	—	—	—	—
Total allowances	<u>\$ 14,870</u>	<u>\$ 9,235</u>	<u>\$ 6,005</u>	<u>\$ 5,635</u>	<u>\$ 2,220</u>	61.0	53.5
Book value of fixed assets	<u>\$105,023</u>	<u>\$75,960</u>	<u>\$83,743</u>	<u>\$24,063</u>	<u>\$7,783*</u>	38.2	9.3*
Depreciation charges	1,200	2,400	3,600	1,200*	1,200*	50.0*	33.3*
Organization expense	<u>\$266,712</u>	<u>\$225,024</u>	<u>\$246,523</u>	<u>\$41,688</u>	<u>\$21,499*</u>	18.5	8.7*
<i>Liabilities and Capital</i>							
<i>CURRENT LIABILITIES</i>							
Notes payable	\$ 1,500	\$ 2,725	\$ 2,500	\$ 1,225*	\$ 225	45.0*	9.0
Accounts payable	20,156	15,064	16,120	5,092	1,065*	33.8	6.7*
Accrued taxes and other expenses	12,465	3,186	8,653	9,279	5,467*	290.9	63.2*
Total current liabilities	<u>\$ 34,121</u>	<u>\$ 20,975</u>	<u>\$ 27,282</u>	<u>\$13,146</u>	<u>\$ 6,307*</u>	62.7	23.1*
Funded Debt	30,000	50,000	50,000	20,000*	—	40.0*	—
First-mortgage bonds	<u>\$ 64,121</u>	<u>\$ 70,975</u>	<u>\$ 77,282</u>	<u>\$ 6,854*</u>	<u>\$ 6,307*</u>	9.7*	8.2*
<i>CAPITAL STOCK</i>							
Common stock (Par, \$100)	180,000	150,000	150,000	30,000	—	20.0	—
RETAINED EARNINGS	<u>\$26,591</u>	<u>\$4,049</u>	<u>\$15,241</u>	<u>\$18,542</u>	<u>\$15,192</u>	462.5	79.2*
	<u>\$966,712</u>	<u>\$225,024</u>	<u>\$246,523</u>	<u>\$41,688</u>	<u>\$21,499*</u>	18.5	8.7*

Fig 15 (Cont.)

THE B CORPORATION
Statement Accounting for Variation in Capital
For Year Ended December 31, 1960

	<u>December 31</u>		<u>Capital</u>	
	<u>1960</u>	<u>1959</u>	<u>Increase</u>	<u>Decrease</u>
<i>Debits</i>				
<i>(Assets)</i>				
Cash	\$ 11,826	\$ 6,468	\$ 5,358	
Marketable securities	—	21,500		\$21,500
Notes receivable (customers)	153	—	153	
Accounts receivable (customers)	60,193	48,526	11,667	
Merchandise inventory	88,517	69,935	18,582	
Prepaid expenses	1,625	1,185	440	
Land	30,000	24,000	6,000	
Building	56,250	42,965	13,285	
Furniture and fixtures	27,143	18,230	8,913	
Delivery equipment	6,500	—	6,500	
Organization expense	1,200	2,400		1,200
	<u>\$283,407</u>	<u>\$235,209</u>		
<i>Credits</i>				
<i>(Liabilities and Allowances)</i>				
Notes payable	\$ 1,500	\$ 2,725	1,225	
Accounts payable	20,156	15,064		5,092
Accrued taxes and other expenses	12,465	3,186		9,279
Bonds payable	30,000	50,000	20,000	
Allowance for doubtful accounts	1,825	950		875
Allowance for depreciation of building	8,450	6,362		2,088
Allowance for depreciation of furniture and fixtures	5,070	2,873		2,197
Allowance for depreciation of delivery equipment	1,350	—		1,350
Increase in capital				48,542
			<u>\$92,123</u>	<u>\$92,123</u>
Accounted for as follows				
CAPITAL STOCK	180,000	150,000	\$30,000	
RETAINED EARNINGS	22,591	4,049	18,542	
	<u>\$283,407</u>	<u>\$235,209</u>		<u>\$48,542</u>

Fig 15

in the interim between the balance sheet dates and do not represent an analysis of the individual transactions

The statement described above has been named by some writers the "where got, where gone" statement, the "decrease" column being called "where got" and the "increase" column being called "where gone," apparently on the assumption that each balance sheet change represents either a provision (got) or an application (gone) of resources. This classification does apply in some cases, resources were provided in the illustration by the sale

THE B CORPORATION
Statement Accounting for Variation in Capital
For Year Ended December 31, 1960

	December 31	
	1960	1959
CAPITAL		
Capital stock	\$180,000	\$150,000
Retained earnings	22,591	1,049
	<u>\$202,591</u>	<u>\$151,049</u>
Increase in capital		48,542
	<u><u>\$202,591</u></u>	<u><u>\$202,591</u></u>

The above change in capital was caused by the following

FACTORS INCREASING CAPITAL

Increase in assets

Cash	\$ 5,358		
Notes receivable (customers)	153		
Accounts receivable (customers)	11,667		
Merchandise inventory	18,582		
Prepaid expenses	440		
Land	6,000		
Building	13,285		
Furniture and fixtures	8,913		
Delivery equipment	<u>6,500</u>	<u>\$70,898</u>	

Decreases in liabilities

Notes payable	\$ 1,225		
Bonds payable	<u>20,000</u>	<u>21,225</u>	<u>\$92,123</u>

FACTORS DECREASING CAPITAL

Decreases in assets

Marketable securities	\$21,500		
Organization expense	<u>1,200</u>	<u>\$22,700</u>	

Increases in liabilities

Accounts payable	\$ 5,092		
Accrued taxes and other expenses	<u>9,279</u>	<u>14,371</u>	

Increases in allowances

Allowance for doubtful accounts	\$ 875		
Allowance for depreciation of building	2,088		
Allowance for depreciation of furniture and fixtures	2,197		
Allowance for depreciation of delivery equipment	<u>1,350</u>	<u>6,510</u>	<u>43,581</u>
Increase in capital			<u><u>\$48,542</u></u>

Fig 16

of marketable securities and the creation of accounts payable, and they were applied to the purchase of furniture and to the payment of notes payable. However, resources were not provided when organization expense was reduced or when allowances for depreciation were increased. It is obvious that all balance sheet changes

cannot be classified in the two categories of provision and application of resources, therefore such terminology is not used in this book. The classification of each asset and liability change as increasing or decreasing capital is, however, quite logical and consistent with good accounting principles. It presents a useful survey of the changes between balance sheet dates.

A second form of statement accounting for variation in capital

THE B CORPORATION
Statement Accounting for Variation in Capital
For Year Ended December 31, 1960

	Capital	
	Increase	Decrease
CHANGES IN ASSETS AND LIABILITIES		
Current assets	\$13,825	
Fixed assets	29,063	
Deferred charges		\$ 1,200
Current liabilities		13,146
Funded debt	20,000	
	<u>\$62,888</u>	<u>\$14,346</u>
Increase in capital		48,542
	<u><u>\$62,888</u></u>	<u><u>\$62,888</u></u>
OPERATIONS CAUSING THE ABOVE CHANGES		
Factors increasing capital		
Net income per income statement		\$22,792
Sale of capital stock		30,000
Adjustment of 1949 depreciation		250
		<u>\$53,042</u>
Factors decreasing capital		
Dividend paid		4,500
Increase in capital		<u><u>\$48,542</u></u>

Fig. 17

tal as shown in Figure 16.¹ In this statement the factors causing the change in capital are arranged in a form which is somewhat more readable than the form (shown in Figure 15) and which is of particular value in presenting a report of financial changes to a business executive. It may well be called the "narrative form."

A third form of statement is illustrated in Figure 17. In this statement the change in capital, in condensed form, is accounted for by data obtained from the income and surplus statements. Other variations of this statement might be devised.

It might be mentioned that the statements shown in Figures

15, 16, and 17) are not commonly used in business. They are included here primarily to provide the reader with an understanding of the effect of operations on the financial status of a business. This knowledge will be useful in understanding the matters presented in Chapter 7.

THE B CORPORATION
Comparative Common-Size Balance Sheet
December 31, 1959 and 1960

	December 31	
	1960	1959
<i>Assets</i>		
CURRENT ASSETS		
Cash	4.5%	2.9%
Marketable securities	—	9.5
Notes receivable (customers)	—	—
Accounts receivable (customers)*	21.9	21.1
Merchandise inventory	33.2	31.1
Prepaid expenses	6	5
Total current assets	60.2%	65.1%
FIXED ASSETS *		
Land	11.2%	10.6%
Building	17.9	16.2
Furniture and fixtures	8.3	7.0
Delivery equipment	1.9	—
Total fixed assets	39.3%	33.8%
DEFERRED CHARGES		
Organization expense	5	1.1
	100.0%	100.0%
<i>Liabilities and Capital</i>		
CURRENT LIABILITIES		
Notes payable	5%	1.2%
Accounts payable	7.5	6.7
Accrued taxes and other expenses	1.6	1.4
Total current liabilities	12.6%	9.3%
FUNDED DEBT		
First-mortgage bonds	11.2%	22.3%
Total liabilities	23.8%	31.6%
CAPITAL STOCK		
Common stock (Par, \$100)	67.8	66.6
RETAINED EARNINGS		
	8.4	1.8
	100.0%	100.0%

* Net of allowances

Fig. 18

Common-Size Balance Sheet

A device which has been suggested for use in analyzing balance sheets is to compute the ratio of each asset to total assets and the ratio of each liability and capital item to total liabilities and capital (which is the same amount as total assets). A statement in this form is known as a common-size, or 100%, statement, since the total of the assets and also that of the liabilities and capital is 100%, and, because this would be true of all statements so constructed, they are of a common size.

The comparative common-size balance sheet of The B Corporation for December 31, 1959 and 1960, is illustrated in Figure 18. It will be seen that this statement shows the relation of the components to the whole—that is, the relation of each asset to total assets and each liability and capital item to total liabilities and capital. An inspection of the statement yields such information as that on December 31, 1959, the current assets were 65.1% of total assets and that on the same day in 1960 they were 60.2% of the total. It should be borne in mind, however, that these percentages show the relation of the current assets to total assets in each year; they do not show the variation in the current assets from year to year. In fact, upon referring to the original balance sheets, it will be seen that, although the percentage was lower in 1960 than in 1959, the current assets were actually higher. The reason for the decrease in the percentage in the common-size statement is that the total assets increased proportionately more than total current assets, and the percentage on December 31, 1960, is computed on a higher base than the percentage on December 31, 1959.

Thus, the comparative common-size balance sheet, when read horizontally, does not give information about the trends of the individual items but the trends of their relationship to the total. It is doubtful whether the observation of the trends of these relationships is of any value to the analyst, because the total is affected by the variations in all its components, and therefore the trends of the relationships are too complex for interpretation. If it could be established in any particular business that, for example, the inventory of merchandise should normally be a certain percentage of total assets, or that notes payable should normally be

a certain percentage of total liabilities and capital, the common-size balance sheet would be useful, but it is usually impossible to establish such a norm

It is possible, however, to compute the relative magnitude of each component of a subdivision of the balance sheet to the total of that subdivision. For instance, it may be established in a certain case that the merchandise inventory should not normally exceed 50% of current assets. In such case the observation of the trend of the relationship of inventory to total current assets would be desirable.

THE C CORPORATION
Balance Sheet
December 31, 1960

<i>Assets</i>		
CURRENT ASSETS		
Cash	\$ 35,872	3 5%
Marketable securities	35,000	3 4
Accounts receivable (customers)*	167,690	16 4
Merchandise inventory	387,265	37 9
Prepaid expenses	1,250	1
Total current assets	<u>\$ 627,077</u>	<u>61 3%</u>
FIXED ASSETS *		
Land	\$ 82,500	8 1%
Buildings	203,158	19 9
Furniture and fixtures	95,760	9 3
Total fixed assets	<u>\$ 381,418</u>	<u>37 3%</u>
DEFERRED CHARGES		
	\$ 14,475	1 4%
	<u><u>\$1,022,970</u></u>	<u><u>100 0%</u></u>
<i>Liabilities and Capital</i>		
CURRENT LIABILITIES		
Notes payable	\$ 83,750	8 1%
Accounts payable	57,087	5 6
Accrued taxes and other expenses	29,242	2 8
Total liabilities	<u>\$ 170,079</u>	<u>16 5%</u>
CAPITAL STOCK		
Preferred stock (Par, \$100)	\$ 100,000	9 8%
Common stock (Par, \$100)	500,000	49 0%
Total capital stock	<u>\$ 600,000</u>	<u>58 8%</u>
RETAINED EARNINGS		
	\$ 252,891	24 7%
	<u><u>\$1,022,970</u></u>	<u><u>100 0%</u></u>
SALES		
	<u><u>\$2,870,625</u></u>	<u><u>281 4%</u></u>

* Net of allowances

Fig 19.

From the above it is evident that the common-size balance sheet should be used only for the study of proportions in a single statement and not for the study of trends. Even in the study of proportions in one statement, however, the common-size device

THE B CORPORATION AND THE C CORPORATION

Comparative Common-Size Balance Sheet

December 31, 1960

	<i>Assets</i>	<u>The B Corp</u>	<u>The C Corp</u>
CURRENT ASSETS			
Cash		45%	35%
Marketable securities		—	34
Notes receivable (customers)		—	—
Accounts receivable (customers)*		219	164
Merchandise inventory		332	379
Prepaid expenses		6	1
Total current assets		<u>602%</u>	<u>613%</u>
FIXED ASSETS *			
Land		112%	81%
Buildings		179	199
Furniture and fixtures		83	93
Delivery equipment		19	—
Total fixed assets		<u>393%</u>	<u>373%</u>
DEFERRED CHARGES			
		5%	14%
		<u>1000%</u>	<u>1000%</u>
<i>Liabilities and Capital</i>			
CURRENT LIABILITIES			
Notes payable		5%	81%
Accounts payable		75	56
Accrued taxes and other expenses		46	28
Total current liabilities		<u>126%</u>	<u>165%</u>
FUNDED DEBT			
First-mortgage bonds		112%	—
Total liabilities		<u>238%</u>	<u>165%</u>
CAPITAL STOCK			
Preferred stock (Par, \$100)		—	98%
Common stock (Par, \$100)		678%	490
		<u>678%</u>	<u>588%</u>
RETAINED EARNINGS			
		81%	247%
		<u>1000%</u>	<u>1000%</u>
SALES			
		<u>3307%</u>	<u>2814%</u>

* Net of allowances

Fig 20.

is usually not satisfactory because it is hardly possible to establish standard proportions, it is, therefore, not recommended for general use

Comparative Common-Size Balance Sheet of Two Enterprises

The common-size balance sheet has also been suggested for the comparison of two business enterprises at a certain date. Let it be assumed that it is desired to compare the financial position of The *B* Corporation with that of The *C* Corporation as of December 31, 1960, perhaps as a basis for deciding which offers the better prospects for profitable investment, and that for this purpose a copy of the balance sheet of The *C* Corporation, illustrated in Figure 19, has been secured. A comparative common-size balance sheet of the two enterprises as of December 31, 1960, may be constructed, as shown in Figure 20.

From the dollar magnitudes it is seen that the business of The *C* Corporation is on a larger scale than that of The *B* Corporation, a fact which makes comparison difficult. This difficulty is removed by translating the dollars into percentages, thus reducing the statements of these companies to a common size. If the sales of The *B* Corporation during 1960 had been \$883,017 and those of The *C* Corporation \$2,870,625, then, although The *C* Corporation had more dollars of sales during 1960 than The *B* Corporation, it is found that this volume was smaller in proportion to the amount of wealth invested in the enterprise, for the sales of The *C* Corporation were 281.4% of total assets, whereas those of The *B* Corporation were 330.7% of its total assets.

In like manner other items in the statements may be compared. The investment in buildings of The *C* Corporation, for instance, represents a greater proportion of total assets than that of The *B* Corporation, while, on the other hand, the proportion of its liabilities to total liabilities and capital is lower. By thus converting the items in the statements to percentages, one is able to see more clearly the relative proportions of the financial elements in the two companies than when the items are expressed in dollars.

Attention is directed to the fact, however, that the conclusions in regard to the relative success of these enterprises will be

valid only if their statements are truly comparable. The stated amounts of the assets of the two enterprises must be on reasonably similar bases, and the accounting methods used by them must not vary too greatly. Information on these points is not usually available to the external analyst, and unfortunately without it he may be comparing statements which are not comparable.

Horizontal and Vertical Analysis

It has been demonstrated that the comparative balance sheet may be analyzed both horizontally and vertically. The horizontal analysis consists of a study of the behavior of each of the entities in the statement—that is, its increases and decreases with the passage of time. This is a dynamic type of analysis, for it shows the changes which have taken place. The vertical analysis is a study of the quantitative relationships existing among the items at a particular date. It is a static type of analysis or study of position.

In studying the fixed assets of The B Corporation, it is observed that the comparative balance sheet shows that the stated amount of the fixed assets on December 31, 1960, was 38.2% greater than on December 31, 1959. Then, upon examining the comparative common-size balance sheet, it is found that on December 31, 1960, the fixed assets were 39.3% of total assets, whereas on December 31, 1959, they were 33.8% of total assets. The horizontal analysis indicates the rate of increase during the year, and the vertical analysis indicates what proportion of the assets were of the fixed type at the beginning and at the end of the year.

The two types of analysis, horizontal and vertical, form the backbone of modern financial statement analysis technique. It is important for the analyst to become familiar with the significance of each type. No conflict exists between them, each gives its own peculiar kind of information. Both kinds, static and dynamic, are necessary for the complete analysis. However, the mere computation of percentages is not sufficient. These percentages are used by the analyst as indicators, and their indications must be interpreted; the analyst must determine whether the various proportions or changes are favorable or unfavorable.

The Slide Rule

From the foregoing it is seen that the technique of analysis consists to a large extent of the computation of percentages. This computation involves a considerable amount of arithmetic, which is often distasteful. Fortunately a simple device is available to reduce the computations to an easy mechanical process, that device is the slide rule. Although the slide rule is the engineer's constant aid, it has not usually been considered part of the accountant's equipment, since most accounting arithmetic consists merely of addition and subtraction. In analysis work, however, it is necessary to use division in order to obtain percentages. Such division is troublesome with pencil and paper but can be performed in an amazingly quick and easy manner with the slide rule. The use of the slide rule for multiplication and division can be mastered by most persons in about half an hour.

The objection that the slide rule gives approximations only is obviated by the fact that the analyst is not usually interested in carrying his percentages further than tenths of one per cent. Since the 10-inch slide rule scale gives results correct to within about one part in 1000, or one-tenth of one per cent, the slide rule is adequate for his purposes. (From Chapter 2 the reader will have learned that) accounting statements are not stated in terms of absolute values but are largely statements of opinion, so that the application of highly refined mathematical methods to the data contained therein is not warranted, in fact, it is actually misleading, because it gives an impression of precise measurement which is entirely unjustified. It will be noted that the computations (in this chapter) have not been carried out beyond tenths of a per cent.

Variation in Current Position

A statement accounting for the variation in the capital of a business enterprise between two successive closing dates by setting forth the variations in the balances of the asset and liability accounts and thus summarizing the changes in the position of the enterprise, as far as can be seen from the accounts, was presented in Chapter 6. Statements accounting for the variation in the *current* position of the enterprise, are presented in this chapter.

Fixed and Current Wealth

The wealth possessed by a business may be classified into two distinct categories: (1) the properties which are to be retained permanently in the enterprise, such as land, buildings, and equipment, and (2) the properties which are not permanent but which are revolving from day to day, being acquired and disposed of in the process of carrying on the business, such as cash, receivables, and merchandise. The investment in the second type of property is constantly changing its form in what is called the *trading cycle*: cash, to merchandise, to receivables, and back to cash. Accountants call the permanent property *fixed assets* and the revolving property *current assets*. Economists use the term *capital* as a synonym for property, including property rights, and call the permanent form *fixed capital* and the revolving form *current capital*. Businessmen and accountants do not commonly use the term *current capital*, instead they refer to it as *revolving*, *circulating*, *liquid*, or *working capital*.

Working Capital

The term *working capital* is used to signify not only wealth in the current form—that is, the current assets—but also the excess of current assets over current liabilities. Since the expression has been used in two different ways, it becomes necessary when using it to explain which meaning is intended. It is commonly used by accountants to designate the excess of the current assets over the current liabilities—theoretically, that amount of the current assets which would remain if all the current liabilities were paid.

The excess of the assets of a business over its obligations represents the interest of the owner or owners in the business, this excess accountants call *capital*. They treat the current division of the balance sheet in a similar manner, calling the excess of current assets over current liabilities the *working capital*.

When the term is employed as a synonym for “current assets,” it becomes necessary to find another to describe the excess of the current assets over the current liabilities. Those who use the term in this manner call this excess the *net working capital*.

(In this book) *working capital* is used in the accountant's sense of the excess of the current assets over the current liabilities.

Statement Accounting for Variation in Working Capital

The statement to be given consideration first has for some time been designated by various titles containing the word *funds*, such as “statement of funds,” “statement of application of funds,” “statement of sources and disposition of funds,” and so forth. The use of the word *funds* in the title of the statements has caused considerable confusion because it is not clear just what is meant by *funds*. Writers have on various occasions explained the use of the word in this connection as referring to either (1) net resources, (2) working capital, or (3) cash. Because it is possible to prepare a statement to meet the requirements of each of these three uses of the word *funds*, a statement on each of the three bases is explained (in this book). The statement on the net resources or capital basis has been described under the title of “statement accounting for variation in capital”, the statement on the cash basis will be

considered later in this chapter with the title "statement accounting for variation in cash"

Since the working capital of a business is the net of the balances of the current asset and current liability accounts, the transactions that affect these accounts will obviously be the cause of the *change* in the working capital. The noncurrent accounts affected by the contra to the debits and credits to the current asset and current liability accounts will indicate the *causes* of the variation in the working capital.

Thus, if a debit to either of the current asset accounts Cash, Notes Receivable, or Accounts Receivable has as its contra a credit to Sales, this fact indicates a sale of merchandise, while if the credit is to a fixed asset account, the sale of a fixed asset is indicated. A credit to such an account as Interest Earned or Rent Earned would indicate the earning of various types of miscellaneous revenue. A credit to Capital Stock would indicate the sale of capital stock, while a credit to Bonds Payable would indicate the sale of bonds, and so forth.

In similar manner, a credit to the current asset account Cash, or to either of the current liability accounts Notes Payable or Accounts Payable, might have as its contra a debit to an expense account, thus indicating that the payment or recognition of an expense had caused the decrease in working capital. However, the debit might be to a fixed asset account, showing that the purchase or improvement of a fixed asset had caused the decrease in working capital. Debits to the Bonds Payable and Capital Stock accounts would show that bonds had been redeemed and capital stock retired, respectively, while a debit to Surplus with a contra to the current liability account Dividends Payable would indicate the declaration of a dividend, and so forth.

The transactions mentioned above are summarized as follows:

Transactions increasing working capital

(Debits to current asset and current liability accounts, credits to noncurrent accounts)

- Sales of merchandise
- Sales of fixed assets
- Earning of miscellaneous revenue.
- Issue of stock
- Issue of bonds.

Transactions decreasing working capital

(Debits to noncurrent accounts, credits to current asset and current liability accounts)

- () Expenses
 - () Purchases of and improvement in fixed assets.
 - () Redemption of bonds
 - () Retirement of capital stock
 - () Dividends declared (except stock dividends).

A summary of all the transactions affecting the working capital would serve to account for the variation in the working capital of a business as between the beginning and the end of an accounting period. Such a summary may be prepared from the balance sheets as of the beginning and end of the period, with the addition of the net income figure. The use of additional data such as are contained in the income statement and the retained earnings statement for the period and supplementary schedules will make the statement more informative. ✓

Method No. 1

Let it be assumed that the comparative balance sheet or position statement of The D Corporation as of December 31, 1959 and 1960, its income statement for the year ended December 31, 1960, and its statement of retained earnings for the year ended December 31, 1960 are as shown in Figures 21, 22, and 23, respectively. Further, let it be assumed that information has been obtained from the Corporation to the effect that during the year furniture which had cost \$300 and had been depreciated \$50 was sold for \$225.

The preparation of the statement accounting for the variation in working capital is facilitated by the use of a work sheet such as is shown in Figure 24. In the first pair of columns of the work sheet, the data of the two-year comparative balance sheet and the income statement for the year under consideration are tabulated. The second pair of columns is used to show the changes in the balance-sheet items.

Because every change in working capital affects a noncurrent account, if all the transactions of a business during a certain period

either increased or decreased the working capital, the net of the changes in the balances of the noncurrent accounts would be the amount of the change in working capital, and a list of the changes in these accounts would explain the change in working capital. However, certain transactions usually occur that do not affect the working capital. To obtain a summary of the causes of the change in working capital, therefore, all changes in the noncurrent accounts that did not affect working capital are eliminated.

THE D CORPORATION
Position Statement
December 31, 1959 and 1960

	December 31, 1960		December 31, 1959	
CURRENT ASSETS				
Cash		\$ 6,619		\$ 3,889
Notes receivable		500		
Accounts receivable	\$ 5,420		\$ 5,683	
Less—Allowance for bad debts	90	5,330	60	5,623
Merchandise inventory		12,100		8,745
Accrued income		5		
Prepaid expenses		100		200
Total current assets		<u>\$24,654</u>		<u>\$18,157</u>
CURRENT LIABILITIES				
Notes payable—Bank		\$ 3,500		
Notes payable—Other				100
Accounts payable		1,268		2,705
Federal income tax payable		2,843		1,395
Dividends payable		3,000		1,400
Accrued expenses		647		540
Deferred income		50		100
Total current liabilities		<u>\$11,308</u>		<u>\$ 6,240</u>
Working capital		<u>\$13,346</u>		<u>\$12,217</u>
FIXED ASSETS				
Furniture and fixtures	\$12,782		\$ 7,950	
Less—Allowance for depreciation	2,255	\$10,527	1,280	\$ 6,670
Delivery equipment	\$ 6,500			
Less—Allowance for depreciation	945	5,555		
Total fixed assets		<u>\$16,082</u>		<u>\$ 6,670</u>
DEFERRED CHARGES				
Organization expense		500		1,000
Stockholders' equity		<u>\$29,928</u>		<u>\$19,887</u>
REPRESENTED BY				
Capital stock		\$20,000		\$14,000
Retained earnings		9,928		5,887
		<u>\$29,928</u>		<u>\$19,887</u>

Fig 21

In the third pair of columns all changes in the noncurrent balance-sheet items are eliminated from the upper ("changes") section of the work sheet by a reversal of the entry that caused the change. What is not eliminated against other items in that section is carried to the lower ("causes") section, where the changes are analyzed in accordance with the information available with respect to their cause. This has two results: (1) from the income statement items are eliminated the effects of the transactions that did not affect working capital, (2) the changes that did affect working capital are given appropriate descriptions in the "other items" section.

In making the eliminations, any convenient sequence may be used. It is suggested, however, that the eliminations with respect

THE D CORPORATION
Income Statement
For Year Ended December 31, 1960

INCOME		
Sales	\$48,675	
Interest earned	12	
Rent earned	<u>600</u>	
		\$49,287
DEDUCTIONS FROM INCOME		
Cost of goods sold	\$27,380	
Selling and administrative expenses	9,448	
Depreciation of furniture and fixtures	1,025	
Depreciation of delivery equipment	945	
Provision for bad debts	80	
Amortization of organization expense	500	
Loss on sale of furniture	25	
Provision for federal income tax	<u>2,843</u>	
		42,246
Net income for the year		<u>\$ 7,041</u>

Fig 22

THE D CORPORATION
Statement of Retained Earnings¹
For Year Ended December 31, 1960

Balance, January 1, 1960	\$ 5,887
Add—Net income for the year	<u>7,041</u>
	\$12,928
Less—Dividend declared December 31, 1960	<u>3,000</u>
Balance, December 31, 1960	<u>\$ 9,928</u>

Fig 23

THE D CORPORATION
Work Sheet for Statement Accounting for Variation in Working Capital
For Year Ended December 31, 1960

BALANCE SHEET ITEMS	December 31		Balance Sheet Changes		Eliminations		Changes in Working Capital	
	1960	1959	Debit	Credit	Debit	Credit	Increase	Decrease
<i>Debit Balances</i>								
Cash	\$ 6,619	\$ 3,889	\$ 2,730				\$2,730	
Notes receivable	500		500				500	
Accounts receivable	5,420	5,683		\$ 263				\$ 263
Merchandise inventory	12,100	8,745	3,355				3,355	
Accrued income	5		5				5	
Prepaid expenses	100	200		100				100
Furniture and fixtures	12,782	7,950	4,832		\$ 300 (c)	\$ 5,182 (d)		
Delivery equipment	6,500		6,500		500 (f)	6,500 (e)		
Organization expense	500	1,000						
	\$44,526	\$27,467						
<i>Credit Balances</i>								
Allowance for bad debts	\$ 90	\$ 60		30				30
Allowance for depreciation of furniture and fixtures	2,255			975				
Allowance for depreciation of delivery equipment	945	1,280		945	1,025 (g)	50 (c)		
Notes payable—Bank	3,500			3,500	945 (h)			3,500
Notes payable—Other		100		100			100	
Accounts payable	1,268	2,705		1,437			1,437	
Federal income tax payable	2,843	1,395						1,448
Dividend payable	3,000	1,400		1,600				1,600
Accrued expenses	647	540		107				107
Deferred income	50	100					50	
Capital stock	20,000	14,000	50	6,000	6,000 (i)			
Retained earnings	9,928	5,887		4,041	7,041 (a)	3,000 (b)		
	\$44,526	\$27,467	\$19,509	\$19,509			\$8,177	\$7,048
Increase in working capital							\$8,177	\$8,177

to the information supplementary to the balance sheet and income statement be made first in order to avoid the possibility of neglect of the matters involved. Therefore, the process might well commence with the elimination of the change in the Retained Earnings account.

From the information at hand in the case of The D Corporation, it is learned that the credit change in the Retained Earnings account is the result of (1) a credit for net income amounting to \$7,041 and a debit for the dividend of \$3,000. The elimination requires the following two entries:

(a) Retained earnings	7,041	
Net income (Income Statement)		7,041

This constitutes in effect a reversal of the entry that closed the net income into the Retained Earnings account. It eliminates not only part of the change in Retained Earnings from the balance-sheet section, but also the net income figure from the income statement section, leaving in the latter section only the income and deductions from income which are part of the causes of the change in working capital.

(b) Declaration of dividend (Other Items)	3,000	
Retained earnings		3,000

To complete the elimination of the change in Retained Earnings, this account is credited for the debit made therein for the dividend—in effect, another reversal of an entry in Retained Earnings. Since the declaration of the dividend was the cause of a decrease in working capital through the creation of the current liability Dividends Payable, it is carried to the section for the “other items” that caused a change in working capital.

The information with respect to the sale of furniture may next be used. This is done in the following manner:

(c) Furniture and fixtures	300	
Allowance for depreciation of furniture and fixtures		50
Loss on sale of furniture (Income Statement)		25
Sale of furniture (Other Items)		225

This in effect reverses the entry made at the time of the sale of the furniture, with the exception that the effect of the increase in working capital through the receipt of \$225 cash is credited to the “other items” section, instead of to Cash.

As no other information regarding the changes in the fixed

property accounts has been given, it is assumed that the remaining increases in these accounts were caused by purchases. These changes are eliminated thus:

(d) Purchase of furniture (Other Items)	5,132	
Furniture and fixtures		5,132
(e) Purchase of delivery equipment (Other Items)	6,500	
Delivery equipment		6,500

The credit change of \$500 in the Organization Expense account is obviously an application of amortization. This had no effect on working capital and is eliminated by:

(f) Organization expense	500	
Amortization of organization expense (Income Statement)		500

The credit changes now in the Allowance for Depreciation accounts represent the depreciation allowed for the period, and, since these allowances had no effect on working capital, they are eliminated by what constitutes reversals of the original entries:

(g) Allowance for depreciation of furniture and fixtures	1,025	
Depreciation of furniture and fixtures (Income Statement)		1,025
(h) Allowance for depreciation of delivery equipment	945	
Depreciation of delivery equipment (Income Statement)		945

The credit increase in the Capital Stock account is assumed to have been caused by the issue of capital stock for cash, thus increasing working capital. The elimination is:

(i) Capital stock	6,000	
Sale of capital stock (Other Items)		6,000

It is now found that the upper ("changes") section of the work sheet contains only changes in the current accounts, the changes in the noncurrent accounts having been eliminated. The working capital changes are summarized in the fourth pair of columns. The lower ("causes") section of the work sheet contains the information with respect to the causes of the changes in the working capital, this information is also summarized in the fourth pair of columns.

The statement accounting for variation in working capital (Figure 25) is now compiled from the lower part of the fourth pair of columns. A comparative working capital schedule to supplement the statement accounting for change in working capital

THE D CORPORATION
Statement Accounting for Variation in Working Capital
For Year Ended December 31, 1960

WORKING CAPITAL WAS INCREASED BY		
Sales	\$48,675	
Interest earned	12	
Rent earned	600	
Sale of furniture	225	
Sale of capital stock	<u>6,000</u>	
Total increases		\$55,512
WORKING CAPITAL WAS DECREASED BY		
Cost of goods sold	\$27,380	
Selling and administrative expenses	9,448	
Provision for bad debts	80	
Provision for federal income tax	2,813	
Declaration of dividend	3,000	
Purchases of furniture	5,132	
Purchase of delivery equipment	<u>6,500</u>	
Total decreases		51,383
Increase in working capital		<u>\$ 1,129</u>

Fig 25

THE D CORPORATION
Comparative Working Capital Schedule
December 31, 1959 and 1960

	<u>December 31</u>		<u>Working Capital</u>	
	<u>1960</u>	<u>1959</u>	<u>Increase</u>	<u>Decrease</u>
CURRENT ASSETS				
Cash	\$ 6,619	\$ 3,889	\$2,730	
Notes receivable	500		500	
Accounts receivable (net)	5,330	5,623		\$ 293
Merchandise inventory	12,100	8,715	3,355	
Accrued income	5		5	
Prepaid expenses	100	200		100
	<u>\$24,654</u>	<u>\$18,457</u>		
CURRENT LIABILITIES				
Notes payable—Bank	\$ 3,500			3,500
Notes payable—Other		\$ 100	100	
Accounts payable	1,268	2,705	1,437	
Federal income tax payable	2,843	1,395		1,448
Dividends payable	3,000	1,400		1,600
Accrued expenses	647	540		107
Deferred income	50	100	50	
	<u>\$11,308</u>	<u>\$ 6,240</u>		
WORKING CAPITAL	<u>\$13,346</u>	<u>\$12,217</u>	<u>\$8,177</u>	<u>\$7,048</u>
Increase in working capital				1,129
			<u>\$8,177</u>	<u>\$8,177</u>

Fig 26

may be compiled from the upper part of the fourth pair of columns and arranged as in Figure 26¹

An alternative form of the statement accounting for variation in working capital is shown in Figure 27. In this form the causes of changes in working capital are classified into two groups: (1) operations, and (2) other causes.

THE D CORPORATION
Statement Accounting for Variation in Working Capital
For Year Ended December 31, 1960

WORKING CAPITAL WAS INCREASED BY OPERATIONS

Income		
Sales	\$18,675	
Interest earned	12	
Rent earned	600	\$49,287
	<hr/>	
Deductions from Income		
Cost of goods sold	\$27,380	
Selling and administrative expenses	9,448	
Provision for bad debts	80	
Provision for federal income tax	2,843	39,751
	<hr/>	
Increase by operations		\$9,536

WORKING CAPITAL WAS DECREASED BY OTHER CAUSES

Declaration of dividend	\$ 3,000	
Purchase of furniture	5,132	
Purchase of delivery equipment	6,500	
	<hr/>	
Decrease by other causes		\$14,632

WORKING CAPITAL WAS INCREASED BY OTHER CAUSES

Sale of furniture	\$ 225	
Sale of capital stock	6,000	
	<hr/>	
Increase by other causes		6,225
Net decrease by other causes		8,407
Increase in working capital		<u>\$1 129</u>

Fig. 27

Purpose of the Statement

Although, as the title implies, the statement accounting for variation in working capital accounts for the difference in the working capital at the beginning and end of a period, the object

¹ The work sheet may be abridged by omitting the balance-sheet amounts, commencing with the balance-sheet changes, and placing the income-statement data thereunder, thus requiring only three pairs of columns. A further abridgment may be made by listing the working capital instead of the current assets and current liabilities, thus making it necessary to compile the comparative working capital schedule from another source. Since the unabridged work sheet is more understandable, the abridgments are not recommended for use by the student.

in preparing this statement is not the verification of the working capital figure as of the end of the period but rather to obtain a review of the financial activities of a business that have caused a change in working capital and thus in current position. Since most of the financial transactions affect the working capital, a summary of the causes of the change in working capital provides a valuable survey of significant financial events

There are, however, various uncommon transactions which may be significant in certain cases but which do not come within the scope of the statement because they do not affect the working capital. Examples of such transactions are acquisition of fixed assets by issue of stock, conversion of bonds into stock, and declaration of a stock dividend. Such transactions would be observed in the process of making the eliminations in the work sheet.

For example, the acquisition of a building by issue of stock would require the elimination

Capital stock
Building

The elimination for the conversion of bonds into stock would be

Capital stock
Bonds payable

For the stock dividend it would consist of

Capital stock
Retained earnings

The analyst might mention these events in notes to the statement accounting for variation in working capital.

Statement Accounting for Variation in Working Capital in External Analysis

The statement accounting for variation in working capital can be prepared by the external as well as the internal analyst, although some of the information obtained from sources other than the balance sheet and income statement may be lacking. This information is particularly concerned with changes in retained earnings and disposition of fixed assets. When it is lacking, the statement will be obscure in this respect. However, where a corporation's securities are sold in a public market and it therefore submits its statements to the Securities and Exchange Commission, most of this information can be obtained. The data

regarding changes in Surplus are found in the Statement of Surplus Data as to changes in fixed assets are found in the Schedule of Property, Plant, and Equipment (Schedule V of Form 10-K) and the Schedule of Reserves for Depreciation, Depletion, and Amortization of Property, Plant, and Equipment (Schedule VI of Form 10-K) Information regarding the gain or loss on disposal of fixed assets is now usually included in the income statement,

Method No. 2

If in a certain instance it is found undesirable to include in the statement accounting for variation in working capital the details of the sources of income and the deductions therefrom, or if the income statement should not be available to the analyst but the amount of the net income is known, the work sheet may be prepared as in Figure 28

In place of the income statement section, this work sheet has a section for "income and income adjustments" The credit for elimination (a) is carried to this section, as are also the various eliminations applying against income statement items—in the case of the *D* Corporation, eliminations (c), (f), (g), and (h) Under this method these eliminations become adjustments of the net income figure The remaining eliminations are treated as in the work sheet illustrated in Figure 24

The statement produced by the method here outlined is illustrated in Figure 29.

Advantages and Disadvantages of Method No. 2

Method No. 2 is preferred by some because the resulting statement is related to the income statement by its showing of the net income This form, however, has a disadvantage in the "adding back" to the net income of the deductions from income which did not affect the working capital, for it is difficult for those not familiar with accounting to understand why this is done It should be remembered that this statement is intended primarily for business executives, stockholders, and others who do not necessarily understand accounting Under Method No. 1, the deductions from income not affecting working capital do not appear in the statement, since they are eliminated in the work sheet.

THE D CORPORATION
Work Sheet for Statement Accounting for Variation in Working Capital
For Year Ended December 31, 1960

	December 31		Balance Sheet Changes		Eliminations and Adjustments		Changes in Working Capital	
	1960	1959	Debit	Credit	Debit	Credit	Increase	Decrease
BALANCE SHEET ITEMS								
<i>Debit Balances</i>								
Cash	\$ 6,619	\$ 4,889	\$ 2,730				\$ 2,730	
Notes receivable	500		500				500	
Accounts receivable	5,420	5,683		\$ 263				\$ 263
Merchandise inventory	12,100	8,745	3,355				3,355	
Accrued income	5		5				5	
Prepaid expenses	100	200		100				100
Furniture and fixtures	12,782	7,950	4,832		\$ 300 (c)	\$ 5 132 (j)		
Delivery equipment	6,500		6,500		500 (f)	6,500 (e)		
Organization expense	500	1,000						
	\$44,526	\$27,467						
<i>Credit Balances</i>								
Allowance for bad debts	\$ 90	\$ 60		30				30
Allowance for depreciation of furniture and fixtures	2,255			975				
Allowance for depreciation of delivery equipment	945	1,280		945	1 025 (g)	50 (i)		
Notes payable—Bank	3,500			3,500	945 (h)			3,500
Notes payable—Other		100					100	
Accounts payable	1,268	2,705	100					
Federal income tax payable	2,843	1,395	1,437				1,437	
Dividend payable	3,000	1,400		1,600				1,448
Accrued expenses	647	540		107				1,600
Deferred income	50	100	30				50	
Capital stock	20,000	14,000		6,000	6,000 (i)			
Retained earnings	9,928	5,887		4,041	7 041 (a)	3,000 (b)		
	\$44,526	\$27,467	\$19,509	\$19,509			\$8,177	\$7,048
								1 129
							\$8,177	\$8,177
Increase in working capital								

CAUSES OF CHANGES IN WORKING CAPITAL

INCOME AND INCOME ADJUSTMENTS

Net income
 Less on sale of furniture
 Amortization of organization expense
 Depreciation of furniture and fixtures
 Depreciation of delivery equipment

OTHER ITEMS

Declaration of dividend
 Sale of furniture
 Purchase of furniture
 Purchase of delivery equipment
 Sale of capital stock

Increase in working capital

Working Capital	
Decrease	Increase
7,041 (a)	\$ 7,041
25 (c)	25
500 (f)	500
1,025 (g)	1,025
945 (h)	945
<hr/>	
3,000 (l)	\$ 3,000
5,132 (d)	5,132
6,500 (e)	6,500
6,000 (i)	6,000
\$30,443	\$14,632
	\$15,761
	<hr/>
	1,129
	\$15,761
	<hr/>

Fig. 23

THE D CORPORATION
Statement Accounting for Variation in Working Capital
For Year Ended December 31, 1960

WORKING CAPITAL WAS INCREASED BY		
Net income (per income statement)	\$7,041	
Add—Adjustments for deductions from income which did not affect working capital		
Loss on sale of furniture	25	
Amortization of organization expense	500	
Depreciation of furniture and fixtures	1,025	
Depreciation of delivery equipment	945	
Net income, as adjusted	\$9,536	
Sale of furniture	225	
Sale of capital stock	6,000	
Total increases		\$15,761
WORKING CAPITAL WAS DECREASED BY		
Declaration of dividend	\$3,000	
Purchase of furniture	5,132	
Purchase of delivery equipment	6,500	
Total decreases		14,632
Increase in working capital		<u>\$ 1,129</u>

Fig. 29

Depreciation an Alleged Source of Funds

The corporations that include the form of statement obtained by Method No. 2 in their annual reports to stockholders usually do not explain why depreciation is added to the net income. Also, many use the word *funds* in place of *working capital*. A typical illustration is

Funds provided by	
Net income (per income statement)	xxxx
Depreciation	xxxx
(etc.)	

Since in common parlance "funds" means cash, the reader of such a statement who is not trained in accounting naturally assumes that cash was provided by depreciation. Many instances of this assumption can be cited. There is, for example, the case of a well-known business executive who stated in a published interview that his business had over a certain period of time acquired several millions of dollars through depreciation. Also, a certain newspaper once reported that corporations were obtaining

so much money from depreciation that they required no additional financing. Then there is the research study by an economist who compiled statistics by the use of "funds" statements and came up with the amazing conclusion that in a certain year about five billion dollars were obtained in the United States through depreciation.

The Fallacious Fixed Asset Replacement Fund Theory

Some economists, accepting the dictum that depreciation is a source of funds, have developed the theory that depreciation provides for the replacement of the fixed assets. It runs somewhat as follows: The fixed assets are consumed by the process of wear and tear and are therefore decreased. The working capital is increased each period to the extent of the amount by which depreciating assets are decreased. Therefore, depreciation provides a fund of wealth which may be used for the replacement of the assets that have been consumed.

Because of the constant rise in the price level in recent years, replacements can usually be effected only at costs which are higher than the costs of the assets replaced. Management is therefore faced with the problem of obtaining sufficient funds for such replacement. As a solution to this problem, various economists have argued that, since depreciation provides the funds for the replacement of the fixed assets that have been consumed, business has not been provided with sufficient funds by depreciation on the basis of the cost of the exhausted assets, and that, in order to obtain adequate funds with which to purchase replacements on the higher price level, the amount of the depreciation should be increased. The reader will here recognize the concept of "economic depreciation" mentioned in Chapter 4.

The following illustration will serve to dispel the notion that working capital is obtained through depreciation.

Net sales		\$200,000
Cost of goods sold		<u>85,000</u>
		\$115,000
Selling, general, and administrative expenses	\$80,000	
Depreciation	<u>15,000</u>	<u>95,000</u>
Net income for the year		<u><u>\$ 20,000</u></u>

The cost of goods sold and the selling, general, and administrative expenses were paid for, in the main, out of sales revenue. However, no disbursement of cash was required for the depreciation, assuming that the assets depreciated were paid for in previous periods. Therefore, in order to calculate the amount of working capital provided by operations during the period, it is necessary to eliminate or "add back" the deduction for depreciation. Thus, the working capital provided was \$35,000 (\$20,000 + \$15,000). In other words, it may be said that the provision of working capital exceeded the net income (on the accrual basis) by \$15,000.

The working capital provided in the illustrative case would be the same \$35,000 if depreciation had been ignored. The resulting income statement would be

Net sales	\$200,000
Cost of goods sold	<u>85,000</u>
	\$115,000
Selling, general, and administrative expenses	<u>80,000</u>
Net income for the year	<u>\$ 35,000</u>

No elimination or "adding back" is required under these conditions, and the net income coincides with the provision of working capital. It is thus seen that depreciation does not provide "funds" or working capital, it is merely a matter of cost allocation, as explained in Chapter 2.

Another argument advanced for increased depreciation is that if the depreciation were increased the net income would be less, therefore, less dividends would be paid and there would be more funds available for the replacement of fixed assets. However, that less dividends would be paid would not necessarily follow. It would be so only if the corporation had no retained earnings accumulated from prior years.

The managerial problem of the replacement of fixed assets at higher costs cannot be solved by manipulating the depreciation charge. It is a problem of obtaining additional cash. This can be done in any one of several ways, such as (1) additional investment by the owners, (2) retention of earnings in the business, and (3) increasing the revenue by raising the sales prices. However, the raising of sales prices is not always feasible, particularly in a competitive market.

Statement Accounting for Variation in Cash

A statement of financial events may be made not only by accounting for the variation in working capital, but by an accounting for the variation in the cash balance between the beginning and end of a period. Such a statement is particularly useful to the internal analyst who is required to explain to management the sources of cash and its disposition during a particular period of time. The external analyst will not find it so useful, because he does not have access to the accounting records to obtain certain information which is necessary for its satisfactory completion. The statement, however, may be compiled externally, as will be shown later, but wanting in various details.

Applying the method used in preparing the statement on the working-capital basis, all balance-sheet changes except that in Cash are eliminated. The work sheet for the preparation of the statement on the cash basis is shown in Figure 30, from which it is seen that eliminations (a), and (c) through (i) are similar to those in the work sheet on the working capital basis.

Elimination (b) for the dividend declared takes the form of a complete elimination, because the declaration of a dividend, although it decreases working capital, does not affect cash. The elimination is

(b) Dividends payable	3,000	
Retained earnings		3,000

The provision for bad debts does not affect Cash, therefore, it is eliminated by

(j) Allowance for bad debts	80	
Provision for bad debts (Income Statement)		80

The balance in the Allowance for Bad Debts was \$60 at the beginning of the period and, after making an allowance of \$80, the balance was \$90. Therefore, the amount of bad debts written off during the period was \$50. This did not affect Cash, and therefore it is eliminated by

(k) Accounts receivable	50	
Allowance for bad debts		50

The item Notes Payable—Bank indicates that a loan was ob-

tained by discounting the corporation's own note. As cash was increased by this transaction, the elimination is

(l) Notes payable—Bank	3,500	
Loan from bank (Other Items)		3,500

The dividend payable at December 31, 1959 was obviously paid during 1960, thus decreasing Cash. The elimination of the change in the item Dividend Payable is completed by

(m) Payment of 1959 dividend (Other Items)	1,100	
Dividend payable		1,400

The merchandise inventory change is eliminated by two entries

(n) Merchandise inventory	8,745	
Cost of goods sold (Income Statement)		8,745
(o) Cost of goods sold (Income Statement)	12,100	
Merchandise inventory		12,100

Elimination (n) removes the initial inventory, and elimination (o), the final inventory, from the cost of goods sold, leaving a balance of \$30,735, which represents the amount of the merchandise purchases—one of the causes of decrease in cash. The following will demonstrate this:

Merchandise inventory, January 1, 1960	\$ 8,745
Purchases	<u>30,735</u>
	\$39,480
Merchandise inventory, December 31, 1960	<u>12,100</u>
Cost of goods sold	<u>\$27,380</u>

The change in Federal Income Tax Payable is eliminated by two entries: (p) for the 1959 tax which was paid in 1960, and (q) for the 1960 tax, which did not affect cash.

(p) Payment of 1959 federal income tax (Other Items)	1,395	
Federal income tax payable		1,395
(q) Federal income tax payable	2,843	
Federal income tax (Income Statement)		2,843

The remaining changes, other than that in cash, must now be eliminated. These eliminations are necessary to convert the data obtained from the financial statements—which are on the accrual basis—to the cash basis, on which the statement is prepared. Of these changes, three are related to the increase in cash and three to the decrease in cash. Those related to the increase in cash are: changes in receivables, accrued income, and deferred

income, those related to the decrease in cash are changes in payables, prepaid expenses, and accrued expenses. The elimination of these changes with consequent adjustment of income and expense items will now be reviewed.

ADJUSTMENTS OF THE CASH INCREASE

Receivables

An *increase* in receivables indicates an excess of the stated income on the accrual basis over the amount collected, therefore, the increase is *deducted* from such income to adjust it to the cash basis. A *decrease* in receivables indicates an excess of collection of income over the stated amount on the accrual basis, therefore, the decrease is *added* to the income to adjust it to the cash basis.

Accrued Income

An *increase* in accrued income indicates that a portion of the income included in certain income accounts on the accrual basis has not been collected, therefore, the amount of this increase is *deducted* from the appropriate income items to adjust them to the cash basis. A *decrease* in accrued income indicates the collection of some income accrued in a prior period, therefore, the amount of this decrease is *added* to the appropriate income items to adjust them to the cash basis.

Deferred Income

An *increase* in deferred income indicates that income has been collected which is not included in certain income accounts on the accrual basis, therefore, the amount of this increase is *added* to the appropriate income items to adjust them to the cash basis. A *decrease* in deferred income indicates that income received prior to the period under review is included in certain income accounts on the accrual basis, therefore, the amount of this decrease is *deducted* from the appropriate income items to adjust them to the cash basis.

ADJUSTMENTS OF THE CASH DECREASE

Payables

An *increase* in payables indicates that a portion of the sums indicated as expenses or purchases of merchandise or other assets, on the accrual basis, were not paid for, therefore, the amount of this increase is *deducted* from the appropriate items to adjust them to the cash basis. A *decrease* in payables indicates an excess of payments over the stated amount of expenses or purchases of merchandise or other assets, on the accrual basis, therefore, the amount of this decrease is *added* to the appropriate items to adjust them to the cash basis.

Prepaid Expenses

An *increase* in prepaid expenses indicates that a certain portion of the expenses paid for during the period under review are not included in the expenses on the accrual basis, therefore, the amount of this increase is *added* to the appropriate expense items to adjust them to the cash basis. A *decrease* in prepaid expenses indicates that certain expenses paid for in a prior period are included in the expenses on the accrual basis, therefore, the amount of this decrease is *deducted* from the appropriate expense items to adjust them to the cash basis.

Accrued Expenses

An *increase* in accrued expenses indicates that sums included in the expense accounts on the accrual basis have not been paid for in the period under review, therefore, the amount of this increase is *deducted* from the appropriate expense items to adjust them to the cash basis. A *decrease* in accrued expenses indicates that certain expenses that were accrued in a prior period were paid for in the period under review, therefore, the amount of this decrease is *added* to the appropriate expense items on the accrual basis to adjust them to the cash basis.

Summary of Adjustments

<i>Item</i>		
Receivables	Increase	Deduct from income
	Decrease	Add to income
Accrued income	Increase	Deduct from income
	Decrease	Add to income
Deferred income	Increase	Add to income
	Decrease	Deduct from income
Payables	Increase	Deduct from expense or purchases of merchandise or other assets
	Decrease	Add to expense or purchases of merchandise or other assets
Prepaid expenses	Increase	Add to expense
	Decrease	Deduct from expense
Accrued expenses	Increase	Deduct from expense
	Decrease	Add to expense

Additional Adjustments for the Illustrative Case

The additional adjustments to be made in the work sheet of The *D* Corporation are as follows

The \$213 decrease in Accounts Receivable was in an account that arose from the sale of merchandise. The elimination is

(r) Accounts receivable	213	
Sales		213

The \$500 increase in Notes Receivable represents the uncollected portion of a stock subscription. The elimination is

(s) Sale of capital stock (Other Items)	500	
Notes receivable		500

The \$5 increase in Accrued Income is for interest. The elimination is

(t) Interest earned	5	
Accrued income		5

The \$50 decrease in Deferred Income is for rent. The elimination is

(u) Rent earned	50	
Deferred income		50

THE D CORPORATION
Work Sheet for Statement Accounting for Variation in Cash
For Year Ended December 31, 1960

	December 31		Balance Sheet Changes		Eliminations		Changes in Cash	
	1960	1959	Debit	Credit	Debit	Credit	Increase	Decrease
BALANCE SHEET ITEMS								
<i>Debit Balances</i>								
Cash	\$ 6,619	\$ 3,889	\$ 2,730			\$ 500 (s)	\$ 2,730	
Notes receivable	500		500					
Accounts receivable	5,420	5,683		\$ 263	\$ 50 (k)			
Merchandise inventory	12,100	8,745	3,355		213 (r)	12,100 (o)		
Accrued income	5		5		8,745 (n)	5 (t)		
Prepaid expenses	100	200		100	100 (s)			
Furniture and fixtures	12,782	7,950	4,832		300 (c)	5,132 (d)		
Delivery equipment	6,500		6,500			6,500 (e)		
Organization expense	500	1,000		500	500 (f)			
	\$44,526	\$27,467						
<i>Credit Balances</i>								
Allowance for bad debts	\$ 90	\$ 60		30	80 (j)	50 (k)		
Allowance for depreciation of furniture and fixtures	2,255	1,280		975	1,025 (g)	50 (c)		
Allowance for depreciation of delivery equipment	945			945	945 (h)			
Notes payable—Bank	3,500	100		3,500	3,500 (l)			
Notes payable—Other						100 (v)		
Accounts payable	1,268	2,705	100			1,437 (w)		
Federal income tax payable	2,843	1,395	1,437	1,448	2,843 (q)	1,395 (p)		
Dividend payable	3,000	1,400		1,600	3,000 (b)	1,400 (m)		
Accrued expenses	647	540		107	107 (j)			
Deferred income	50	100	50			50 (u)		
Capital stock	20,000	14,000		6,000	6,000 (i)			
Retained earnings	9,928	5,887		4,041	7,041 (a)	3,000 (h)	\$ 2,730	\$ 2,730
	\$44,526	\$27,467	\$19,509	\$19,509			\$ 2,730	\$ 2,730
Increase in cash								

CAUSES OF CHANGES IN CASH
INCOME STATEMENT ITEMS
Year Ended December 31, 1960

CAUSES OF CHANGES IN CASH INCOME STATEMENT ITEMS Year Ended December 31, 1960	Deductions from Income	Income
Sales		\$48,675
Interest earned		12
Rent earned		600
Cost of goods sold (purchased)	\$27,380	
	9,448	
Selling and administrative expenses	1,025	
Depreciation of furniture and fixtures	945	
Depreciation of delivery equipment	80	
Provision for bad debts	500	
Amortization of organization expense	25	
Loss on sale of furniture	2,843	
Provision for federal income tax	\$42,240	\$49,287
Net income	7,041	
	\$49,287	\$49,287
<i>Other Items</i>		
Sale of furniture		
Purchase of furniture		
Purchase of delivery equipment		
Sale of capital stock		
Loan from bank		
Payment of 1959 dividend		
Payment of 1959 federal income tax		
Increase in cash		

Fig 30

Cash	
Decrease	Increase
213 (r)	\$48,885
5 (t)	7
50 (u)	550
12,100 (v)	
100 (w)	\$31,535
1,000 (x)	9,678
437 (y)	
100 (z)	
107 (1)	
1,025 (2)	
945 (3)	
80 (4)	
500 (5)	
25 (6)	
2,943 (7)	
7,041 (a)	
2.45 (c)	225
5,132 (d)	5,132
6,500 (e)	6,500
500 (s)	5,500
3,500 (f)	3,500
1,400 (m)	1,400
1,395 (p)	1,395
\$63 068	\$65,940
	2,730
	\$68,670
\$63 068	\$68,670

The \$100 decrease in Notes Payable—Other is for purchase of merchandise in a prior period. The elimination is

(v) Cost of goods sold	100	
Notes payable—Other		100

The \$1,437 decrease in Accounts Payable is for Merchandise Purchases, \$1,000, and for Selling and Administrative Expenses, \$437. The elimination is

(w) Cost of goods sold	1,000	
Selling and administrative expenses	437	
Accounts payable		1,437

The \$100 decrease in Prepaid Expenses is for Selling and Administrative Expenses. The elimination is

(x) Prepaid expenses	100	
Selling and administrative expenses		100

The \$107 increase in Accrued Expenses is for Selling and Administrative Expenses. The elimination is

(y) Accrued expenses	107	
Selling and administrative expenses		107

The statement accounting for variation in cash obtained from the fourth pair of columns in the lower part of the work sheet in Figure 30 is shown in Figure 31.

THE D CORPORATION

Statement Accounting for Variation in Cash

For Year Ended December 31, 1960

CASH WAS INCREASED BY		
Sales	\$48,888	
Interest earned	7	
Rent earned	550	
Sale of furniture	225	
Sale of capital stock	5,500	
Loan from bank	3,500	
Total increases		\$58,670
CASH WAS DECREASED BY		
Purchase of merchandise	\$30,835	
Selling and administrative expenses	10,078	
Purchase of furniture	5,132	
Purchase of delivery equipment	6,500	
Payment of 1959 dividend	1,400	
Payment of 1959 federal income tax	1,395	
Total decreases		55,940
Increase in cash		<u>\$ 2,730</u>

Fig 31

Comparison of the Statements on the Working Capital and Cash Bases

Upon comparing the statement on the working capital basis (Figure 25) with that on the cash basis (Figure 31), it is seen that these statements contain essentially the same story of financial events. The existing differences are caused by the fact that in the case of the statement on the cash basis, the data obtained from the financial statements on the accrual basis are converted to the cash basis. Not only are the figures modified by the adjustments enumerated above, but there are other differences

✓(1) The loan from the bank which does not change the amount of working capital does increase the cash

✓(2) Instead of the cost of the goods sold on the working capital basis, only the purchase of merchandise is listed on the cash basis, since other changes in the merchandise inventory do not affect cash

✓(3) The provision for bad debts, which affects working capital, does not affect cash

✓(4) A dividend affects working capital when it is declared, it affects cash only when paid

✓(5) The federal income tax affects working capital when it is recorded, it affects cash only when paid

It should be noted that the statement on the working capital basis is consonant with the accrual basis of accounting. Attention is also directed to the fact that the statement on the cash basis is not a statement of cash receipts and disbursements but an enumeration of the net effect of various kinds of business events on the cash

The Statement Prepared Externally

The external analyst, not having access to the information necessary for making adjustments (r) to (y) as in Figure 30, will have to content himself with bringing the contras to eliminations (i) to (y) to a section for adjustments of the cash increase and the cash decrease at the bottom of the work sheet as in Figure 32. The resulting statement will be as in Figure 33

THE D CORPORATION
Work Sheet for Statement Accounting for Variation in Cash
For Year Ended December 31, 1960

	December 31		Balance Sheet Changes		Eliminations		Change in Cash	
	1960	1959	Debit	Credit	Debit	Credit	Increase	Decrease
BALANCE SHEET ITEMS								
<i>Debit Balances</i>								
Cash	\$ 6,619	\$ 3,889	\$ 2,730				\$ 2,730	
Notes receivable	500		500					
Accounts receivable	5,420	5,683		\$ 263	\$ 50 (A)	\$ 500 (a)		
Merchandise inventory	12,100	8,745	3,355		213 (c)	12,100 (c)		
Accrued income	5		5		8,745 (b)	5 (c)		
Prepaid expenses	100	200		100	100 (x)			
Furniture and fixtures	12,782	7,950	4,832		300 (c)	5,132 (d)		
Delivery equipment	6,500		6,500		500 (f)	6,500 (e)		
Organization expense	500	1,000		500				
	\$44,526	\$27,467						
<i>Credit Balances</i>								
Allowance for bad debts	\$ 90	\$ 60		30	80 (j)	50 (A)		
Allowance for depreciation of furniture and fixtures	2,255	1,280		975	1,025 (g)	50 (c)		
Allowance for depreciation of delivery equipment	945			945	945 (h)			
Notes payable—Bank	3,500	100			3,500 (i)	100 (v)		
Notes payable—Other						1,437 (w)		
Accounts payable	1,268	2,705	100			1,395 (p)		
Federal income tax payable	2,843	1,395	1,437	1,448	2,843 (q)			
Dividend payable	3,000	1,400		1,600	3,000 (b)	1,400 (m)		
Accrued expenses	647	540		107	107 (y)			
Deferred income	50	100	50			50 (u)		
Capital stock	20,000	14,000		6,000	6,000 (t)			
Retained earnings	9,928	5,887		4,041	7,041 (a)	3,000 (b)		
	\$44,526	\$27,467	\$19,509	\$19,509			\$2,730	\$2,730
Increase in cash							\$2,730	\$2,730

THE D CORPORATION
Statement Accounting for Variation in Cash
For Year Ended December 31, 1960

CASH WAS INCREASED BY			
Sales			\$48,675
Interest earned			12
Rent earned			600
Sale of furniture			225
Sale of capital stock			6,000
Loan from bank			3,500
			<u>\$59,012</u>
Add—Decrease in Accounts receivable			213
			<u>\$59,225</u>
Less—Increase in Notes receivable	\$ 500		
Increase in Accrued income		5	
Decrease in Deferred income		50	555
Total increases			<u>\$58,670</u>
CASH WAS DECREASED BY			
Purchase of merchandise			\$30,735
Selling and administrative expenses			9,448
Purchase of furniture			5,132
Purchase of delivery equipment			6,500
Payment of 1959 dividend			1,400
Payment of 1959 federal income tax			1,395
			<u>\$54,610</u>
Add—Decrease in Notes payable—Other	\$ 100		
Decrease in Accounts payable		1,437	1,537
			<u>\$56,147</u>
Less—Decrease in Prepaid expenses	\$ 100		
Increase in Accrued expenses		107	207
Total decreases			<u>55,940</u>
Increase in cash			<u><u>\$ 2,730</u></u>

Fig 33

Some call this statement the "cash-flow statement" and divide it into the two sections, "cash provided" and "cash applied," in the manner of those who call the statement here called the "statement accounting for variation in working capital" the "statement of application of funds," with the two sections "funds provided" and "funds applied." The businessman may well wonder what the difference is between the two statements, one of which shows the provision and application of *funds* and the other the provision and application of *cash*.

Comparison of Income Statements

The income statement summarizes the operations of a business during a specific period of time and shows the result of such operations in the form of net income or net loss. By a comparison of income statements for successive periods it is possible to observe the progress of a business. Therefore, this chapter and the next will be devoted to an exposition of the various devices at the disposal of the analyst for the study and comparison of successive income statements.

Comparative Income Statement

The comparative income statement contains the same columns as the comparative balance sheet and provides the same type of information—the account balances, the dollars of increase or decrease, and, if desired, the percentages of increase or decrease.

Figure 34 illustrates the comparative income statement of The *E* Manufacturing Corporation for the three years ended December 31, 1960. This statement is supplemented in Figure 35 by a comparative statement of cost of goods manufactured and sold, which gives the details of the figures for cost of goods sold shown in the income statement.

Horizontal Analysis

The percentages shown in Figures 34 and 35, by measuring the changes in the items across the years, provide a basis for horizontal analysis. For example, from Figure 34 it is seen that in

THE E MANUFACTURING CORPORATION
Comparative Income Statement
For Years Ended December 31, 1958, 1959, and 1960

	1960	1959	1958	Increase-Decrease*	
			1959-1960	1958-1960	1958-1959
SALES					
Deduct—Discounts, returns and allowances	\$83,250	\$721,456	\$685,234	\$112,704	\$157%
Sales, net of discounts, returns and allowances	13,903	11,588	11,207	2,315	34
Deduct—Cost of goods sold	\$820,347	\$709,888	\$674,027	\$35,841	53
Gross margin	483,894	463,250	419,274	20,649	105
	<u>\$536,448</u>	<u>\$246,618</u>	<u>\$254,753</u>	<u>\$ 89,830</u>	<u>\$ 8,135*</u>
SELLING EXPENSES					
Advertising	\$15,500	\$ 9,500	\$ 10,260	\$ 6,000	\$ 750*
Salesmen's salaries	61,690	51,450	53,275	10,240	1,825*
Commissions	7,725	8,240	7,925	515*	315
Salesmen's traveling expenses	6,250	4,780	5,278	1,470	498*
Freight outward	3,580	1,850	1,750	1,830	100
Delivery expense	6,460	5,043	4,894	1,407	179
Salesroom rent	10,000	8,500	8,500	1,500	—
Depreciation of salesroom furniture	1,857	860	960	977	190*
Depreciation of delivery equipment	2,500	1,600	1,450	900	133 6
Total selling expenses	<u>\$118,632</u>	<u>\$ 91,823</u>	<u>\$120,511</u>	<u>\$23,809</u>	<u>150</u>
	<u>\$220,816</u>	<u>\$154,795</u>	<u>\$160,511</u>	<u>\$ 66,021</u>	<u>\$ 5,716*</u>
GENERAL AND ADMINISTRATIVE EXPENSES					
Rent	\$ 4,800	\$ 3,600	\$ 3,600	\$ 1,200	—
Insurance	750	840	875	90*	35*
Taxes	1,200	1,150	1,175	50	25*
Bad debts	2,750	2,000	1,850	750	150
Officers' salaries	20,000	15,000	15,000	5,000	—
Office salaries	17,250	18,500	18,250	1,250*	250
Telephone and telegraph	1,250	965	1,067	285	102*

Stationery and supplies	3,792	2,683	2,724	1,100	41*	41 4	15*
Miscellaneous expenses	2,345	1,793	2,537	552	744*	30 7	29 1*
Total general and administrative expenses	<u>\$ 54,137</u>	<u>\$ 46,531</u>	<u>\$ 47,078</u>	<u>\$ 7,606</u>	<u>\$ 547*</u>	<u>16 3</u>	<u>12*</u>
	<u>\$166,679</u>	<u>\$108,264</u>	<u>\$113,433</u>	<u>\$ 58,415</u>	<u>\$ 5,169</u>	<u>54 1</u>	<u>45*</u>
OTHER INCOME							
Interest income	\$ 2,620	\$ 3,795	\$ 2,450	\$ 1,175*	\$ 1,345	31 1*	55 1
Purchase discount	3,792	4,250	3,842	458*	408	10 8*	10 7
Profit on sale of land	—	3,000	—	3,000*	3,000	100 0*	—
Total other income	<u>\$ 6,412</u>	<u>\$ 11,045</u>	<u>\$ 6,292</u>	<u>\$ 4,633*</u>	<u>\$ 4,753</u>	<u>41 8*</u>	<u>75 5</u>
	<u>\$173,091</u>	<u>\$119,309</u>	<u>\$119,725</u>	<u>\$ 53,782</u>	<u>\$ 416*</u>	<u>45 2</u>	<u>3*</u>
INCOME DEDUCTIONS							
Interest expense	\$ 3,500	\$ 4,275	\$ 5,280	\$ 775*	\$ 1,005*	18 2*	19 1*
Loss on sale of fixed assets	350	1,254	904*	904*	1,254	72 0*	—
Total income deductions	<u>\$ 3,850</u>	<u>\$ 5,529</u>	<u>\$ 6,184</u>	<u>\$ 1,679*</u>	<u>\$ 249*</u>	<u>30 3*</u>	<u>47*</u>
Net income before federal income tax	<u>\$169,241</u>	<u>\$113,780</u>	<u>\$114,445</u>	<u>\$55,461</u>	<u>\$ 665*</u>	<u>48 6</u>	<u>6*</u>
Federal income tax	80,390	43,038	43,489	37,352	451*	37 3	1 1*
Net income for the year	<u>\$ 88,851</u>	<u>\$ 70,742</u>	<u>\$ 70,956</u>	<u>\$ 18,109</u>	<u>\$ 214*</u>	<u>25 6</u>	<u>3*</u>

Fig. 34.

THE E MANUFACTURING CORPORATION
Comparative Statement of Cost of Goods Manufactured and Sold
For Years Ended December 31, 1958, 1959, and 1960

	1960	1959	1958	Increase—Decrease*		
				1959-1960	1958-1959	1959-1960
Raw materials						
Initial inventory	\$296,213	\$241,536	\$193,290	\$ 54,677	\$ 48,246	22 7 ⁰⁰ / ₁₀₀
Add—Purchases	324,568	305,257	287,643	19,311	17,614	6 2
	<u>\$620,781</u>	<u>\$546,793</u>	<u>\$480,933</u>	<u>\$ 73,988</u>	<u>\$ 65,860</u>	<u>13 5</u>
Deduct—Returns and allowances	1,250	2,046	1,056	796*	960	39 0*
	<u>\$619,531</u>	<u>\$544,747</u>	<u>\$479,877</u>	<u>\$ 74,784</u>	<u>\$ 64,870</u>	<u>13 5</u>
Deduct—Final inventory	324,848	296,213	241,536	28,635	54,677	9 8
Raw materials used	<u>\$294,683</u>	<u>\$248,534</u>	<u>\$238,341</u>	<u>\$ 46,149</u>	<u>\$ 10,193</u>	<u>18 5</u>
Direct labor	183,538	121,532	101,263	62,006	20,269	50 8
Manufacturing expenses	72,811	65,391	57,452	7,420	7,939	11 3
Total materials, direct labor, and expense	<u>\$551,032</u>	<u>\$435,457</u>	<u>\$397,056</u>	<u>\$115,575</u>	<u>\$ 38,401</u>	<u>26 7</u>
Add—Initial inventory goods in process	9,103	9,896	10,268	793*	372*	8 0*
	<u>\$560,135</u>	<u>\$445,353</u>	<u>\$407,324</u>	<u>\$114,782</u>	<u>\$ 38,029</u>	<u>25 8</u>
Deduct—Final inventory goods in process	3,256	9,103	9,896	5,847*	793*	64 3*
Cost of goods manufactured	<u>\$556,879</u>	<u>\$436,250</u>	<u>\$397,428</u>	<u>\$120,629</u>	<u>\$ 38,822</u>	<u>27 8</u>
Add—Initial inventory finished goods	132,550	159,650	181,496	27,000*	21,846*	16 9*
	<u>\$689,429</u>	<u>\$595,900</u>	<u>\$578,924</u>	<u>\$ 93,629</u>	<u>\$ 16,976</u>	<u>15 8</u>
Deduct—Final inventory finished goods	205,630	132,650	159,650	72,980	27,000*	54 9
Cost of goods sold	<u>\$483,799</u>	<u>\$463,250</u>	<u>\$419,274</u>	<u>\$ 20,649</u>	<u>\$ 43,976</u>	<u>4 5</u>

Fig. 35.

THE E MANUFACTURING CORPORATION
Condensed Comparative Income Statement
For Years Ended December 31, 1958, 1959, and 1960

	1960		1959		1958	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Sales	\$834,250	101.6	\$721,456	101.6	\$685,234	101.6
Deduct—Discounts, returns, and allowances	13,903	1.6	11,588	1.6	11,207	1.6
Sales, net of discounts, returns and allowances	\$820,347	100.0	\$709,868	100.0	\$674,027	100.0
Deduct—Cost of goods sold	483,899	59.0	463,250	65.3	419,274	62.1
Gross margin	\$336,448	41.0	\$246,618	34.7	\$254,753	37.9
Deduct—Selling expenses	115,632	14.0	91,823	13.0	94,242	14.0
Deduct—General and administrative expenses	\$220,816	27.0	\$154,795	21.7	\$160,511	23.9
Add—Other income	54,137	6.6	46,531	6.5	47,078	7.0
Deduct—Income deductions	\$166,679	20.4	\$108,264	15.2	\$113,433	16.9
Net income before federal income tax	6,412	7	11,045	1.6	6,292	9
Deduct—Federal income tax	\$173,091	21.1	\$119,309	16.8	\$119,725	17.8
Net income for the year	3,850	5	5,529	8	5,280	8
	\$169,241	20.6	\$113,780	16.0	\$114,445	17.0
	80,390	9.8	43,038	6.0	43,489	6.5
	\$ 88,851	10.8	\$ 70,742	10.0	\$ 70,956	10.5

Fig. 36.

THE E MANUFACTURING CORPORATION
Schedules Supporting Comparative Income Statement
For Years Ended December 31, 1958, 1959, and 1960

	1960		1959		1958	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
SELLING EXPENSES						
Advertising	\$ 15,500	13.4	\$ 9,500	10.4	\$10,250	10.9
Salesmen's salaries	61,680	53.3	51,450	56.0	53,275	56.6
Commissions	7,725	6.7	8,240	9.0	7,925	8.4
Salesmen's traveling expenses	6,250	5.4	4,780	5.2	5,278	5.6
Freight outward	3,680	3.2	1,850	2.0	1,750	1.9
Delivery expense	6,450	5.6	5,043	5.5	4,864	5.1
Salesroom rent	10,000	8.6	8,500	9.3	8,500	9.0
Depreciation of salesroom furniture	1,837	1.6	860	.9	950	1.0
Depreciation of delivery equipment	2,500	2.2	1,600	1.7	1,450	1.5
	<u>\$115,632</u>	<u>100.0</u>	<u>\$91,823</u>	<u>100.0</u>	<u>\$94,242</u>	<u>100.0</u>
GENERAL AND ADMINISTRATIVE EXPENSES						
Rent	\$ 4,800	8.9	\$ 3,600	7.7	\$ 3,600	7.7
Insurance	750	1.4	840	1.8	875	1.9
Taxes	1,200	2.2	1,150	2.5	1,175	2.5
Bad debts	2,750	5.0	2,000	4.3	1,850	3.9
Officers' salaries	20,000	37.0	15,000	32.2	15,000	31.8
Office salaries	17,250	31.9	18,500	39.7	18,250	38.9
Telephone and telegraph	1,250	2.3	965	2.1	1,067	2.3
Stationery and supplies	3,792	7.0	2,683	5.8	2,724	5.7
Miscellaneous expenses	2,345	4.3	1,793	3.9	2,537	5.3
	<u>\$ 54,137</u>	<u>100.0</u>	<u>\$46,531</u>	<u>100.0</u>	<u>\$47,078</u>	<u>100.0</u>

OTHER INCOME						
Interest income	\$ 2,620	40 8	\$ 3,795	34 4	\$ 2,450	39 0
Purchase discount	3,792	59 2	4,250	38 5	3,842	61 0
Profit on sale of land	—	—	3,000	27 1	—	—
	<u>\$ 6,412</u>	<u>100 0</u>	<u>\$11,045</u>	<u>100 0</u>	<u>\$ 6,292</u>	<u>100 0</u>
INCOME DEDUCTIONS						
Interest expense	\$ 3,500	90 9	\$ 4,275	77 4	\$ 5,280	100 0
Loss on sale of fixed assets	350	9 1	1,254	22 6	—	—
	<u>\$ 3,850</u>	<u>100 0</u>	<u>\$ 5,529</u>	<u>100 0</u>	<u>\$ 5,280</u>	<u>100 0</u>
MANUFACTURING EXPENSES						
Indirect labor	\$35,235	48 4	\$32,545	49 7	\$30,450	53 0
Light, heat, and power	7,250	10 0	6,472	9 9	4,683	8 2
Rent	6,000	8 2	4,800	7 3	4,800	8 4
Depreciation of machinery and equipment	7,550	10 4	7,240	11 0	6,500	11 3
Telephone and telegraph	1,895	2 6	2,063	3 2	1,547	2 6
Fire insurance	2,850	3 9	2,658	4 1	2,552	4 6
Compensation insurance	5,396	7 4	4,265	6 6	3,840	6 7
Supplies	4,721	6 5	3,650	5 6	2,638	4 5
Miscellaneous	1,914	2 6	1,698	2 6	442	7
	<u>\$72,811</u>	<u>100 0</u>	<u>\$65,391</u>	<u>100 0</u>	<u>\$57,452</u>	<u>100 0</u>

Fig 37.

1951 net sales (net of discounts, returns, and allowances)¹ increased 15.5% over 1959, while cost of goods sold increased only 4.5% but selling expenses increased 25.9%, that is, net sales increased 11.0% more than cost of goods sold, and selling expenses increased 10.4% more than net sales. Figure 35 shows that during 1960 the cost of raw materials used increased 18.5%, direct labor increased 50.8%, and manufacturing expenses increased 11.3% over 1959.

The percentages serve the purpose of focusing attention on the changes that have occurred; important or unusual changes will then be investigated and interpreted in the light of economic facts.

Vertical Analysis

In Figure 36 the comparative income statement of The E Manufacturing Corporation (in condensed form) is shown with percentages of net sales. These percentages provide a vertical measurement of the relation of each item to net sales. For example, in 1959 the cost of goods sold was 65.3% of net sales, whereas in 1960 it was 59.0%, in 1959 the selling expenses were 13.0% of net sales, whereas in 1960 they were 14.0%.

The statement in Figure 36 is supported by the schedules in Figure 37, which show the components of the various expense and income groups. The appended percentages show the relation of each kind of expense or income to the total of the group of which it is a part. For example, in 1959 advertising was 10.4% of selling expenses, while in 1960 it rose to 13.4%, in 1959 salesmen's salaries were 56.0% of selling expenses, whereas they fell in 1960 to 53.3%.

As in the case of the horizontal percentages, the vertical percentages are not an end in themselves but serve as indicators that require interpretation in the light of the underlying causes. In the case of The E Manufacturing Corporation, it would be necessary for the analyst to seek an explanation as to why advertising expenses became a larger portion of selling expenses in 1960 than in

¹ *Net sales* may be either net of returns and allowances or net of discounts, returns, and allowances. The latter form is usually the one available to the external analyst, being preferred in statements prepared for the general public.

1958 and 1959, and salesmen's salaries a smaller portion. He must then decide whether these are favorable or unfavorable indications.

Relation of Expenses to Sales

A significant relationship exists between the expenses and the sales volume. This relationship is more important in the case of some kinds of expense than in the case of others. For example, a considerable increase in sales activity would usually affect selling expenses, perhaps in the form of salesmen's salaries and commissions, delivery expense, and even rent if additional space is required to do business. Administrative expenses are not so sensitive to changes in sales activity as are selling expenses. An expansion of the sales volume might not necessitate an increase of the administrative force. However, a persistent increase in activity, causing a considerable expansion of the enterprise, would sooner or later affect the administrative expenses also. The financial expenses are usually least affected by changes in sales volume. They rather reflect financial policies, but a continued expansion of a business would ultimately affect them also, as when it becomes necessary to incur additional interest expense in order to finance increased activity.

The analyst is interested in the variation of the expenses in relation to the variation in sales because relative changes often reflect the ability of the management to adjust itself to varying conditions. For example, when sales are declining, it would be an indication of good managerial ability to find the selling expenses cut to a point that correlates approximately with the movement of sales. Studying managerial ability plays an important part in the interpretation of the condition of an enterprise.

Relation of Cost of Goods Sold to Sales

The relative changes in the cost of goods sold and the price at which they are sold are of interest to the analyst because the difference, or "spread," or "markup," between these items yields the gross margin, which must be sufficiently large to cover ex-

penses and leave a satisfactory net income. In addition to being affected by variations in cost of materials and, in a manufacturing business, in labor and manufacturing expenses, cost of goods sold is often affected by variations in the volume of sales, because such variations will affect the size of the individual orders for goods purchased and so the price at which they are obtained. Since the percentage of variation in cost is not necessarily in proportion to variation in sales, these two variables require observation.

Common-Size Income Statement

The vertical percentages in the comparative income statement constitute a common-size income statement similar to the

THE E MANUFACTURING CORPORATION			
Comparative Common-Size Income Statement			
For Years Ended December 31, 1958, 1959, and 1960			
	1960	1959	1958
Cost of goods sold	59.0%	65.3%	62.1%
Selling expenses	14.0	13.0	14.0
General and administrative expenses	6.6	6.5	7.0
Income deductions	5	8	8
Federal income tax	9.8	6.0	6.5
	<u>89.9%</u>	<u>91.6%</u>	<u>90.4%</u>
Deduct			
Other income	7	1.6	9
	<u>89.2%</u>	<u>90.0%</u>	<u>89.5%</u>
Net income for the year	10.8	10.0	10.5
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Fig. 38

common-size balance sheet shown in Figure 18. In the common-size balance sheet, each asset is compared with total assets, and each liability and capital item is compared with total liabilities and capital, in other words, the relation of each part to the whole is indicated. In the common-size income statement, the various parts are likewise compared with the whole, that is, the total income from sales is divided into its forms of disposition. The common-size income statement may be arranged as in Figure 36 or as in Figure 38, the latter form emphasizing the fact that it is an accounting for the use of the income from sales. The disposition of the sales dollar may be shown in graphic fashion as in Figure 39.

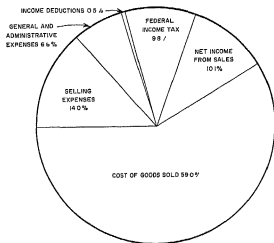


Fig 39 Disposition of the sales dollar, The E Manufacturing Corporation, year ended December 31, 1960.

Horizontal Reading of the Comparative Common-Size Income Statement

In the discussion of the comparative common-size balance sheet it was stated that a horizontal reading yields the trend of the relationship of, for example, the merchandise inventory to total assets and not the trend of the item itself. It was further shown that it is doubtful whether the study of the trend of such a relationship or ratio is of any value to the analyst, since the item "total assets" is affected by the variation in each of the assets of the business, and therefore the trend of the relationship is too complicated for interpretation. This objection, however, does not apply to the horizontal reading of the comparative common-size income statement, for the base, net sales, represents simply the income from sales. A horizontal reading of, for example, the ratios of selling expenses to sales over a number of periods can be interpreted, it reveals the trend of the distribution of sales income to one of the factors operating to produce it.



Common-Size Income Statement of Two Enterprises

The income statements of two enterprises may be compared in the same manner as their balance sheets. Figure 40 illustrates

the comparative common-size income statement of The *F* Corporation and The *G* Corporation. From this statement it is learned that The *G* Corporation has a lower ratio of cost of goods sold per dollar of sales than The *F* Corporation has, with the result that it has a higher percentage of gross margin. On the other hand, all the expenses per dollar of sales of The *F* Corporation are lower than those of the *G* Corporation. These lower expense rates give the *F* Corporation the better final result in higher net income.

In comparing the income statement of two enterprises, the same fundamental problem is faced as in the comparison of two balance sheets. It is necessary to determine whether or not the

THE *F* CORPORATION AND THE *G* CORPORATION
Comparative Common-Size Income Statement
For Year Ended December 31, 1960

	<i>F</i> Corp	<i>G</i> Corp
Sales	100.0%	100.0%
Cost of goods sold	56.1	48.3
Gross margin	43.9%	51.7%
Selling expenses	13.1	19.5
	30.8%	32.2%
General and administrative expenses (including federal income tax)	25.7	28.0
	5.1%	6.2%
Other expenses	3.0	5.1
Net income for the year	2.1%	1.1%

Fig. 40

assets are stated on a similar basis and whether or not the same accounting methods are used. In a trading concern, the cost of goods sold is affected only by the basis on which the inventory is stated, while in a manufacturing enterprise it is affected by both that of the inventories and that of the fixed assets because the cost contains depreciation.

Complementary Nature of the Horizontal and Vertical Analysis

It has been shown that the comparative income statement,¹ like the comparative balance sheet, may be analyzed in two ways—horizontally and vertically. The horizontal analysis shows the rate of change in the factors affecting income, and the vertical

analysis shows the distribution of the income from sales among the factors functioning to produce it. Here, as in the case of the balance sheet, no conflict exists between the two kinds of analysis, each serves a different purpose.

In the case of The *E* Corporation, it is seen from the vertical analysis (Figure 38) that in 1959 the cost of goods sold was 65.3% of net sales, while in 1960 it declined to 59.0%. The reason for the decrease is to be found in the horizontal analysis (Figure 34), for in 1960, while sales increased 15.7% over 1959, the cost of goods sold increased only 4.5%. Similarly, it is seen that selling expenses were 13.0% of net sales in 1959 and that in 1960 they rose to 14.0%. This increase is due to the fact that in 1960 selling expenses rose at a higher rate than sales, the selling expenses rising 25.9% and the sales rising 15.7%.

The foregoing illustrates the complementary nature of the two kinds of analysis. The horizontal reading of the ratio of selling expenses to net sales showed that this ratio had risen. This increase might have been due to one of four changes in the variables, selling expenses and net sales: (1) an increase in selling expenses, (2) a decrease in sales, (3) an increase in both, but a greater increase in selling expenses than in net sales, and (4) a decrease in both, but a greater decrease in net sales than in selling expenses. Upon referring to the horizontal analysis, it was found that the third combination of changes had occurred. Thus the variation noted in the vertical analysis was explained in the horizontal analysis. Both must be used to obtain a complete account of what has occurred.

Variation in Income

Not only the amount of income or loss for a certain period but also the difference between that and the income or loss for the preceding period should be determined. Also, information should be sought regarding the factors that caused the change. In Chapter 8 it was shown that the comparative income statement supplies such information. However, as in the case of the comparative balance sheet, the comparative income statement, although showing the increase or decrease in each item, does not present a summary of the changes in such a manner as to facilitate the study of the various factors affecting income. For this purpose, the comparative income statement may be rearranged in the form of a statement accounting for variation in net income.

Statement Accounting for Variation in Net Income

Figure 41 illustrates a statement accounting for variation in net income in a form analogous to that of the statement accounting for variation in capital. All changes in income statement items are classified according to whether they cause an increase or decrease in net income or loss. The form of this statement is so simple as to require no further explanation.

A second form for the statement accounting for variation in net income is shown in Figure 42. This may be called the narrative form. It classifies the factors affecting net income into two groups: (1) those causing an increase in net income, and (2) those causing a decrease in net income. For each of the factors, the difference between the amounts for the two years is computed, and these differences are totaled to determine the total for each of the two

THE H CORPORATION
Statement Accounting for Variation in Net Income
For Years Ended December 31, 1959 and 1960

	1960	1959	Net Income	
			Increase	Decrease
Sales (net)	\$935,550	\$864,824	\$ 70,726	
Cost of goods sold	564,300	457,848		\$106,452
Gross margin	\$371,250	\$406,976		
Selling expenses	213,526	210,325		3,201
	\$157,724	\$196,651		"
General and administrative expenses (including federal income tax)	118,659	124,327	5,668	
	\$ 39,065	\$ 72,324		
Other expenses (net of other income)	18,471	20,250	1,779	
Net income	\$ 20,594	\$ 52,074	\$ 78,173	\$109,653
Decrease in net income			31,480	
			\$109,653	\$109,653

Fig 41.

THE H CORPORATION
Statement Accounting for Variation in Net Income
For Years Ended December 31, 1959 and 1960

NET INCOME WAS DECREASED BY

Decrease in gross margin, due to

Increase in cost of goods sold

1960	\$564,300	
1959	457,848	\$106,452

Less increase in net sales

1960	\$935,550	
1959	864,824	70,726
		\$35,726

Increase in selling expenses

1960	\$213,526	
1959	210,325	3,201

* Total of factors decreasing net income \$38,927

NET INCOME WAS INCREASED BY

Decrease in general and administrative expenses (including federal income tax)

1959	\$124,327	
1960	118,659	\$ 5,668

Decrease in other expenses (net of other income)

1959	\$ 20,250	
1960	18,471	1,779

Total of factors increasing net income 7,447

Decrease in net income \$31,480

Fig 42

groups. Finally, the smaller of total increases or decreases is subtracted from the greater, the difference being the total increase or decrease in net income. Because of its simplicity and nontechnical nature, this statement enables one not trained in accounting to understand the causes of income variation.

Relation of Sales to Income

✓ The sales, or gross revenues, constitute the fundamental dynamic force in a business enterprise, for, without adequate sales of merchandise or of services, as the case may be, the business will not be successful. This fact is so obvious to those managing an enterprise that attention is usually focused upon sales before most other matters. The average businessman is inclined to be more lavish in his expenditures for sales promotion than in expenditures for other purposes.

The number of dollars of sales, however, is but a superficial and sometimes erroneous measure of success. A business might raise its gross income from sales to very great heights by selling at prices which are so low as not to yield a satisfactory income after the cost of the goods sold and the expenses of doing business are deducted. It is therefore not the number of dollars of sales that measures the ultimate success, but the profitableness of the sales. The amount of the net income is undoubtedly the most vital figure in the statements. Business is conducted to earn income, and its success is measured in terms of income. ✓ Therefore it is necessary to measure the profitableness of the sales. This measure is provided by the ratio of net income to sales, which appears as the last item in the common-size income statement. ✓

Relation of Sales to the Price Level

Sometimes an increase in sales is merely the result of a rise in the price level. Suppose, for example, that the sales in a certain case are as follows.

1957	\$ 87,500
1958	125,250
1959	137,500

If the dollars of sales for 1958 and 1959 are converted to the price level of 1957 by the use of the Consumer Price Index of the

United States Bureau of Labor Statistics, the following results are obtained

	Actual Sales	Average Index for Year	Conversion Factor, 1957 = 100	Sales Converted to 1957 Price Level
1957	\$ 87,500	120.2	1.000	\$ 87,500
1958	125,250	123.5	.973	121,868
1959	137,500	124.6	.965	132,688

The effect of the price level observed on sales above, as well as its effect on other financial statement items, has already been demonstrated in Chapter 4. It is thus obvious that the analyst should not operate in a vacuum divorced from the economic world but should relate his analysis to business conditions.

Analysis of Gross Margin

The item "gross margin" represents, in a merchandising enterprise, the difference between the cost of the merchandise sold and its selling price. Although the cost of the goods sold is conventionally the first deduction from sales revenue in the income statement, it should not be regarded as of greater importance than the operating expenses. Particularly is this true in a manufacturing business, in which many operating expenses are included in the cost of the goods sold at the discretion of the cost accountant or in accordance with the cost procedure that happens to be employed. All costs, whether for goods or services, must be deducted before any income can be recognized. However, a study of the variation in gross margin is of some value, particularly in a merchandising business, although it should be supplemented by a study of the variation in operating expenses.

An analysis to account for the variation in gross margin may be made if the number of units of the commodity sold is known. This information is sometimes obtained by the credit man on request. The investment analyst may find it in corporation reports or in prospectuses for new security issues.

Variations in the item "gross margin," as shown in an income statement, are caused by the variations in the items "sales" and "cost of goods sold." Each of these variables, however, is affected by two forces: commodity volume and price. An analysis of the

change in each "sales" and "cost of goods sold" will consist of three parts, as shown below

Analysis of Variation in "Sales"

(1) Variation due to change in commodity volume

This is obtained by assuming no change in selling price and multiplying the variation in commodity volume by the unit selling price of the former year.¹ The result is an increase or decrease in "sales," depending on whether the commodity volume increased or decreased.

(2) Variation due to change in selling price

This is obtained by assuming no change in commodity volume and multiplying the variation in unit selling price by the commodity volume of the former year. The result is an increase or decrease in "sales," depending on whether the unit selling price increased or decreased.

(3) Variation due to joint selling price and commodity volume change

The assumptions in (1) and (2) are now discarded if they are contrary to fact, which is usually the case. The variation in commodity volume is multiplied by the variation in unit selling price to obtain the joint effect of these changes. The result is either an increase or a decrease in "sales"—an increase if both commodity volume and selling price increased, a decrease if both decreased, and a decrease if either decreased.

Analysis of Variation in "Cost of Goods Sold"

(1) Variation due to change in commodity volume

This is obtained by assuming no change in cost price and multiplying the variation in commodity volume by the unit cost price of the former year.² The result is an increase or decrease in "cost of goods sold," depending on whether the commodity volume increased or decreased.

(2) Variation due to change in cost price.

This is obtained by assuming no change in commodity volume

¹ The unit selling price and the unit cost price are obtained by dividing the dollars of sales and cost by the number of units sold. If they had been sold at various prices, this would give an average unit price.

² See footnote 1.

and multiplying the variation in unit cost price by the commodity volume of the former year. The result is an increase or decrease in "cost of goods sold," depending on whether the unit cost price increased or decreased.

(3) Variation due to joint cost price and commodity volume change

The assumptions in (1) and (2) are now discarded if they are contrary to fact, which is usually the case. The variation in commodity volume is multiplied by the variation in unit cost price. The result is either an increase or decrease in "cost of goods sold" an increase if both commodity volume and cost price increased, a decrease if both decreased, and a decrease if either decreased.⁴

**Statement Accounting for Variation in Gross Margin
for Illustrative Case**

The statement accounting for variation in net income of The H Corporation in Figure 42 shows that gross margin decreased \$35,726, which is the difference between an increase in cost of goods sold of \$106,452 and an increase in net sales of \$70,726. The following information with respect to commodity units sold is given:

	<u>1960</u>	<u>1959</u>	<u>Increase—Decrease*</u>
Commodity units sold	148,500	127,180	21,320

By dividing the sales and cost of goods sold in the statement of The H Corporation by the above figures, the following facts are obtained:

	<u>1960</u>	<u>1959</u>	<u>Increase—Decrease*</u>
Selling price per unit	\$6.30	\$6.80	\$.50*
Cost per unit	3.80	3.60	.20

Applying the above data to those contained in Figure 42, the decrease in gross margin of \$35,726 may now be analyzed as shown in Figure 43:

⁴ Problems are sometimes improvised in which the units of commodity sold are not given but the percentage of change in commodity units sold, their selling price, or their cost price is given. Since in practice it is necessary to have the commodity volume available to compute these percentages, such problems are purely academic and are therefore omitted here.

THE H CORPORATION
Statement Accounting for Variation in Gross Margin
For Years Ended December 31, 1959 and 1960

Analysis of the Increase in "Sales"	
(1) Variation due to change in commodity volume If there had been no change in selling price, an increase in "sales" would have taken place	
Increase in commodity volume, $21,320 \times 1959$ unit selling price, \$6.80 =	\$144,976
(2) Variation due to change in selling price If there had been no change in commodity volume, a decrease in "sales" would have taken place	
1959 commodity volume, $127,180 \times$ decrease in unit selling price, \$50 =	63,590
(3) Variation due to joint change in selling price and commodity volume Contrary to the assumptions made in (1) and (2), there was an increase in commodity volume and a decrease in selling price, the effect of which was a decrease in "sales"	\$81,386
Increase in commodity volume, $21,320 \times$ decrease in selling price, \$50 =	10,660
Increase in "sales"	<u>\$70,726</u>
Analysis of the Increase in "Cost of Goods Sold"	
(1) Variation due to change in commodity volume If there had been no change in cost price, an increase in "cost of goods sold" would have taken place	
Increase in commodity volume, $21,320 \times 1959$ unit cost price, \$3.60 =	\$76,762
(2) Variation due to change in cost price If there had been no change in commodity volume, an increase in "cost of goods sold" would have taken place	
1959 commodity volume, $127,180 \times$ increase in unit cost price, \$20 =	25,436
(3) Variation due to joint change in cost price and commodity volume Contrary to the assumptions made in (1) and (2), there was an increase in both commodity volume and unit cost price, the effect of which was an increase in "cost of goods sold"	
Increase in commodity volume, $21,320 \times$ increase in unit cost price, \$20 =	4,264
Increase in "cost of goods sold"	<u>\$106,452</u>

Fig. 43.

Attention is directed to the fact that this analysis can be performed only in cases in which a single uniform commodity is sold or in which separate figures are available for the sales, cost of goods sold, and units of each commodity sold. Few enterprises sell only one uniform product, when several products are sold, the three kinds of information on all of them are usually not available to the external analyst. Therefore this procedure is not often practicable in external analysis.

Break-Even Point Analysis

A type of analysis sometimes used is based on the "break-even" point—that is, the amount of sales that would produce neither a net income nor a net loss. In the event that the sales

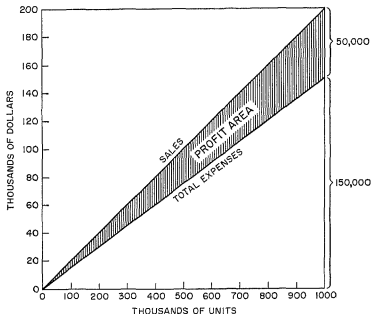


Fig. 44 Profit chart with all expenses variable

should amount to less than is indicated by this point, a net loss would result.

If the total expenses, that is, cost of goods sold plus selling, general, and administrative expenses, were less than and varied in proportion to sales, there would always be net

income. For example, consider an enterprise in which the expenses are 15 cents per unit of commodity sold and which sells the commodity units at 20 cents each. On the first unit sold, 5 cents will be earned, and on 1,000,000 units \$50,000. This situation may be represented graphically as in Figure 44.

In practice, such a condition usually does not obtain. Although certain expenses may vary with the movement of sales—for example, salesmen's commissions and traveling expenses, advertising, telephone and telegraph, repairs to cars and trucks, shipping and delivery costs, postage, supplies, power, and so forth—others are fixed, that is, they are not affected by the variation in sales—for example, depreciation, taxes, rent, insurance,

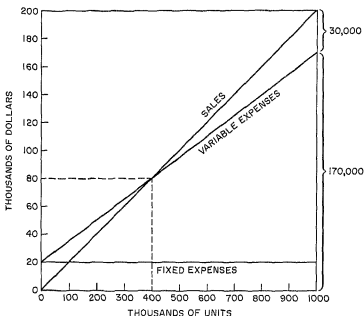


Fig 45 Break-even profit chart with expenses both fixed and variable

heat, and so forth. If in the above illustration it is assumed that fixed expenses amount to \$20,000, the situation would be as represented in Figure 45.

It is seen that the curve for variable expenses commences at \$20,000, which is the total of expenses before any units are sold. The curve intersects the sales curve at a point represented by the sale of 400,000 units for \$80,000. This is the break-even point, or point

at which the sales revenue is equal to the cost of goods sold plus selling, general, and administrative expenses, so that neither a net income nor net loss will result. Sales below this point will produce a graduated loss and those above will produce a graduated net income, for example, the sale of 200,000 units would yield a loss of \$10,000 and the sale of 100,000 would yield a loss of \$15,000, while the sale of 600,000 would yield a net income of \$10,000 and the sale of 1,000,000 would yield a net income of \$30,000.

The break-even point may be computed as follows:

Let S = the sales at the break-even point

Since the sales at the break-even point are equal to the fixed expenses (\$20,000) plus variable expenses (15 cents per unit, or 75% of sales),

$$\begin{aligned} S &= \$20,000 + 75S \\ S - 75S &= \$20,000 \\ 25S &= \$20,000 \\ S &= \$80,000 \end{aligned}$$

The greater the fixed expenses, the higher will be the break-even point. It follows that, other things being equal, the enterprise with the greater fixed expenses must have greater sales to break even.

The above case, however, constitutes an oversimplification of the problem, for it makes assumptions contrary to fact. It assumes that all expenses are either fixed or variable, whereas some of those classified as fixed may become variable as sales increase and some classified as variable may not always vary in proportion to sales. Although rent is classified as a fixed expense, it may at a certain point in the increase of sales activity be increased because of the need for additional salesroom space. Similarly, the rate of salesmen's commissions may suddenly rise because of sales above a certain quota. Many expenses may be classified as semifixed—for example, executive and clerical salaries, association dues, subscriptions to periodicals, and a host of selling expenses which are not in proportion to sales, including such items as rentals of branch offices. Furthermore, the computation does not take into consideration the fact that the rate of cost of goods sold will be decreased as larger quantities are purchased and that sales prices will probably be decreased on larger orders.

In spite of the defects in the break-even point analysis, it serves the purpose of focusing attention on the factors operating

in the problem of expenses and income and so provides a rough basis for the consideration of various managerial problems.

Practical Application of the Break-Even Point Analysis

Consider the following statement

Net sales		\$250,000
Less—Expenses		
Fixed	\$ 25,000	
Variable	<u>150,000</u>	<u>175,000</u>
Net income		<u>\$ 75,000</u>

The company is considering an investment in plant and equipment which will cause an increase in its fixed expenses of \$20,000

The present break-even point computation is as follows

$$\begin{aligned}
 S &= \$25,000 + 60S \\
 S - 60S &= \$25,000 \\
 40S &= \$25,000 \\
 S &= \$62,500
 \end{aligned}$$

If the company makes the investment, the computation will be as follows

$$\begin{aligned}
 S &= \$ 45,000 + 60S \\
 S - 60S &= \$ 45,000 \\
 40S &= \$ 45,000 \\
 S &= \$112,500
 \end{aligned}$$

Therefore, if the expansion is carried out, the sales must increase \$50,000 before the company can earn net income or maintain its present net income. The latter point is demonstrated by the following

Let S' = the sales necessary to maintain present net income
Then,

$$\begin{aligned}
 S' &= \$ 45,000 + 60S' + \$75,000 \text{ (profit)} \\
 S' - 60S' &= \$120,000 \\
 40S' &= \$120,000 \\
 S' &= \$300,000
 \end{aligned}$$

The profit limits under present and proposed conditions may now be compared. If present facilities permit a maximum production and sale of \$300,000, but increased facilities would permit the production and sale of \$500,000, then the profit limits are as follows

	<u>Under Present Conditions</u>	<u>Under Proposed Conditions</u>
Sales	\$300,000	\$500,000
Less—Fixed expenses	<u>25,000</u>	<u>45,000</u>
	\$275,000	\$455,000
Less—Variable expenses (60% of sales)	<u>180,000</u>	<u>300,000</u>
Profit limits	<u>\$ 95,000</u>	<u>\$155,000</u>

If the sales should not increase as expected but remain at the present level, then the increase in the fixed expenses would reduce the net income from \$75,000 to \$55,000. The break-even point will have been raised \$50,000, and sales will have to be increased by this amount to produce the present \$75,000 net income. On the other hand, the net income can be increased by \$60,000 if sales are increased to the extent of \$200,000.

These computations, however, are but rough approximations, for they are based on the assumption contrary to fact that all expenses are either fixed or variable.

Trends

In the four preceding chapters, various devices for measuring changes in the financial statements of a business enterprise between two statement dates were discussed. It was found that the changes may be measured in terms of dollars—that is, absolute increases and decreases—and also in terms of percentages—that is, rates of increase and decrease.

The measurement of variations in terms of percentages is extremely useful, for the rate of change is often more vital than the absolute change. For example, the statement that the sales of a certain enterprise have increased \$50,000 over the previous year is of little value unless the scale of operations of the business is known. In an enterprise in which the sales usually amount to around a million dollars a year, such an increase would be one of about 5 per cent, but in an enterprise in which they usually amount to, say, a hundred thousand, the increase would be one of 50 per cent. Similarly, the statement that the cost of goods sold increased \$10,000 is not so significant as it would be if it were known that this figure represented a rise of 45 per cent. It would become of tremendous importance if it were found that this rise of 45 per cent in cost of goods sold was accompanied by a rise of only 5 per cent in sales.

On the other hand, there is danger that undue emphasis might be given to the percentages. In cases in which the base is a small number, a slight change might be greatly exaggerated by the percentage of change. A good illustration is afforded by the case of the college at which it was announced one morning that during the night $33\frac{1}{3}$ per cent of the female students had eloped. However, the college had only three female students! It can be seen

that it is desirable always to have information available regarding both the absolute and the relative changes

Variations in More Than Two Statements

The methods used for the comparison of two statements may be used when more than two are compared. Let it be assumed that the following are the inventory figures of a business

<u>Dec 31</u>	<u>Inventory</u>
First year	\$25,000
Second year	30,000
Third year	21,750
Fourth year	16,250
Fifth year	24,000

The changes in inventory, stated in absolute figures, are as follows

<u>Dec 31</u>	<u>Increase or Decrease from Previous Year</u>
Second year	+ \$5,000
Third year	- 8,250
Fourth year	- 5,500
Fifth year	+ 7,750

The rates of change are as follows

<u>Dec 31</u>	<u>Percentage of Increase or Decrease from Previous Year</u>
Second year	+ 20.0%
Third year	- 27.5
Fourth year	- 25.3
Fifth year	+ 47.7

Percentages of increase or decrease are quite satisfactory for the comparison of two successive statements, but in comparing three or more statements it is difficult to interpret the series of percentages. The difficulty lies in the fact that the series lacks continuity, each percentage expresses a relationship to a different base—namely, that of each year's inventory to its predecessor. It would be preferable to obtain a series of percentages all of which show a relationship to the same base, for the significance of such percentages can be grasped more readily. A series of this nature may be constructed by computing the percentage of variation of the inventory in each year from that of a certain year selected as the base. If in the illustrative case, the first year is

selected as the base year, the percentages of variation will be as follows

<u>Dec 31</u>	<u>Percentage of Increase or Decrease from First Year</u>
Second year	+20%
Third year	-13
Fourth year	-35
Fifth year	-4

But this method of expression is still somewhat awkward, particularly on account of the use of plus and minus signs. A better method is to state each year's position as a percentage of the base. That is, if the first year is selected as the base year, or 100 per cent, then, by dividing the amount of the inventory on December 31 of each of the following years by that on December 31 of the first year, the relation of each year's inventory to that of the base is obtained. The series of five inventories would be represented thus

<u>Dec 31</u>	<u>Relatives (Base, First Year)</u>
First year	100%
Second year	120
*Third year	87
Fourth year	65
Fifth year	96

This form gives continuity to the series and enables the analyst readily to comprehend the variations in the stated value of the inventory.

Trend Ratios

The ratios of the magnitudes of a financial statement item in a series of statements to its magnitude in one of the statements selected as the base may be called *trend ratios*, because they reveal the trend of the item with the passage of time. The trend ratios constitute an application to the analysis of financial statements of a device that has been used by statisticians in their work since the early days of modern statistical methods. One of its important applications in economics is in the computation of index numbers of prices. In fact, these trend ratios are index numbers of the movements of the various financial factors of a business. Since the trend ratios indicate the trends of the various statement items across the years, they provide a horizontal analysis of compara-

tive statements, a dynamic study of the behavior of the items with the passage of time

In using trend ratios, as in using the other measuring devices, the kind of information provided by the device must be borne in mind. A series of trend ratios shows whether an item has increased or decreased and the rate of increase or decrease, it does not indicate whether the movement is favorable or unfavorable. For the purpose of forming an opinion as to the satisfactoriness of the trend of a certain item, it is necessary to compare it with the trend of some related item in the statements

Comparison of Trends

Let it be assumed that the sales of the enterprise whose inventory figures have been considered were as follows

First year	\$250,000
Second year	240,000
Third year	207,500
Fourth year	195,000
Fifth year	225,000

The trend ratios are as follows

First year	100%
Second year	96
Third year	83
Fourth year	78
Fifth year	90

Placing these beside the trend ratios of the inventory gives the following

Years	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
Inventory	100%	120%	87%	65%	96%
Sales	100	96	83	78	90

This tabulation reveals the movement of the two factors, inventory and sales, for five years. The percentages show that the inventory on December 31 of the second year was 20 per cent higher than on December 31 of the first year, but that the sales during the second year were 4 per cent lower than during the first year. The indication from these relative movements attracts attention, since normally the inventory should not increase when sales are decreasing. However, after the second year, the inventory moved more closely in accordance with sales.

Although the comparison of trends gives some indication as

to whether the behavior of the items compared is favorable or unfavorable, the trend ratios do not provide an evaluation of position. A basis for evaluating position at a certain time or for a certain period is provided by another type of ratio, which is explained in the next chapter

Graphic Representation of Trends

To facilitate the study of trends in a business, the data discussed above may be plotted on graph paper. As in most types of scientific work, such graphs enable one to obtain a vivid picture of the data by relieving the mind of the complications of large numbers and substituting mere lines. Graphic representation of trends is such a great aid in obtaining a dynamic picture that the analyst should always be equipped to construct graphs when making a study of trends over a period of several years.

Trends on the Arithmetic Scale

In graphic representation two kinds of scaling are most popular. The type usually encountered is the co-ordinate scaling, in which the lines are ruled both horizontally and vertically with the same spacing. A graph of this kind is known as an *arithmetic scale chart*, and all who have had any practice in graphic representation are familiar with it. Curves on this type of grid show the absolute increases and decreases in a series.

Figure 46 shows the variation in dollars of inventory and sales during five years for the case discussed above. It is obvious that the absolute variations were considerably greater in sales than in inventory.

Trends on the Semilogarithmic Chart

The importance of studying the rate of change has been mentioned above. To present such information graphically another type of chart, known as the *semilogarithmic*, or *ratio*, *chart*, is used. Such a chart is illustrated in Figure 47, from which it is seen that on the horizontal, or *X*, axis the chart is spaced exactly like the arithmetic chart, but on the vertical, or *Y*, axis it is spaced according to the logarithms of numbers, in other words, the spac-

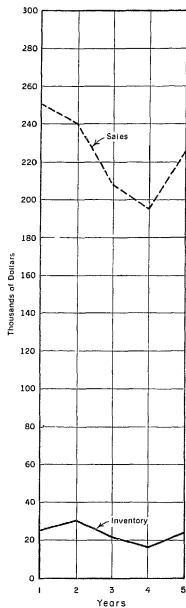


Fig 46 Chart of inventory and sales for five years in dollars on arithmetic scale.

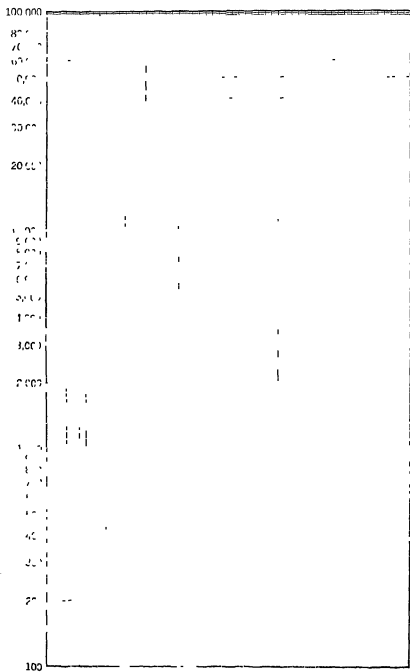


Fig. 47. The semilogarithmic scale.

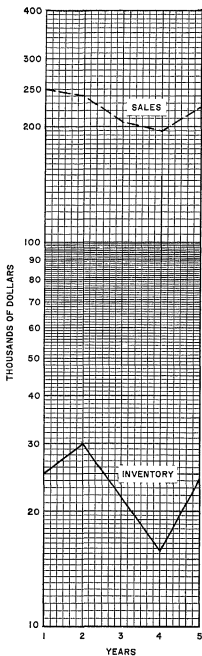


Fig 48 Chart of inventory and sales for five years in dollars on semilogarithmic scale

ings are like those on the slide rule. On the vertical, or logarithmic, scale the distance, for example, between 500 and 1,000 is the same as between 2,000 and 4,000, between 4,000 and 8,000, and between 40,000 and 80,000. That is, the vertical scale is so constructed that equal spaces show equal ratios of magnitudes.

Semilogarithmic paper enables one to plot greatly varying magnitudes on the same chart. The bottom line may have the value of any positive number, the top line of the first cycle will then be ten times the number, the top line of the second cycle will be one hundred times the number, and so on. In Figure 47 the first cycle is from 100 to 1,000, the second is from 1,000 to 10,000, and the third is from 10,000 to 100,000. Curves may therefore be plotted on this chart in terms of hundreds, thousands, and tens of thousands.

In Figure 48 the same data are plotted as in Figure 46, but on the semilogarithmic scale. This chart, instead of showing the absolute changes in inventory and sales, shows the rates of change, which are determined by the slopes of the lines, the steeper the slope, the greater is the rate of change. Figure 48 shows that the rate of change was greater in inventory than in sales, while Figure 46 indicates that the absolute change was greater in sales.

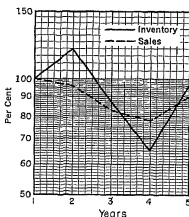


Fig. 49 Chart of trend ratios of inventory and sales for five years on semilogarithmic scale

Preferred Method of Graphic Representation of Trends

The graphic representation of trends may be further improved by plotting the trend ratios instead of the dollars on semilogarithmic paper. The curves of the trend ratios so plotted in Figure 49 are exactly the same as the curves of the absolute numbers plotted in Figure 48 except that they both start at one point (100 per cent). If each curve in Figure 48 is superimposed upon the curve for the same item in Figure 49, it will be found that they are identical. The advantage of plotting in percentages as in Figure 49

is that the curves start at one point and are closer together, as a result, their relative variation may be observed more readily. The procedure of plotting the trend ratios on semilogarithmic paper is recommended for the graphic representation of financial statement trends.

Selection of Base Year

The question should now be raised as to why the first year in the series was selected as the base year in the illustrative case. It might be asked whether this year was selected as a representative or normal year for the purpose of measuring how much above or below par the various factors have moved. In order to answer this question, the trend ratios with each of the other years as the base are tabulated below.

	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>	<u>Fourth Year</u>	<u>Fifth Year</u>
Base second year					
Inventory	83%	100%	73%	54%	80%
Sales	104	100	86	81	94
Base third year					
Inventory	115	138	100	75	110
Sales	120	116	100	94	108
Base fourth year					
Inventory	154	185	134	100	148
Sales	128	123	106	100	115
Base fifth year					
Inventory	104	125	91	68	100
Sales	111	107	92	87	100

These trends are plotted on semilogarithmic charts in Figures 50-53. At first glance these charts appear to be different, but a comparison of the curves will show that they are identical. The difference in appearance is due to the fact that in each case the position of the curve on the chart is different. The change in position is caused by the shifting of the base year, for in that year both curves must meet at 100 per cent. If the corresponding curves in the five charts were to be superimposed, it would be found that they are identical. Thus, the year selected as the base has no effect on the curve. However, it is most convenient to use the first year as the base, since this procedure gives a starting point at the left end of the chart from which the behavior of the various items may be readily observed.

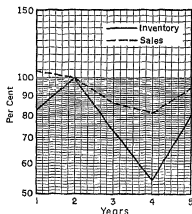


Fig 50. Chart of trends of inventory and sales for five years, base, second year.

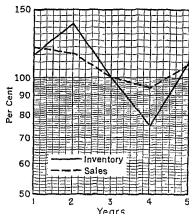


Fig 51. Chart of trends of inventory and sales for five years, base, third year.

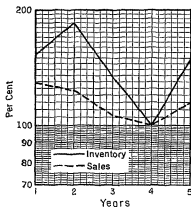


Fig 52. Chart of trends of inventory and sales for five years, base, fourth year

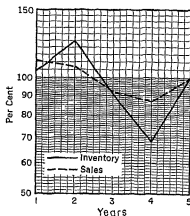


Fig 53. Chart of trends of inventory and sales for five years, base, fifth year

From the above it is evident that in reading the graphs of trend ratios on semilogarithmic paper, only the slopes of the lines should be considered, they indicate the rate of increase or decrease in the financial statement items, the only information it is the function of the trend ratios to give. The position of the curves on the chart is irrelevant.

Because the horizontal analysis is not used to evaluate posi-

tion in any particular year, it is unnecessary to find a normal year to serve as the base

Plotting of Supplementary Data

In addition to the trend ratios of the dollar magnitudes of the items in financial statements, the trend ratios of time series of business data which are not stated in dollars may also be plotted—for example, the trend ratios of the number of units sold, or commodity volume of sales

Let it be assumed that in the illustrative case the units sold during the years under consideration and their trend ratios, with the first year as the base year, are as follows

	Commodity Volume	Trend Ratios (Base, First Year)
First year	1,369,520 units	100%
Second year	1,194,882 "	87
Third year	1,127,140 "	82
Fourth year	944,969 "	69
Fifth year	1,164,092 "	85

The trend of the commodity volume may be plotted with that of price volume of sales and inventory, as shown in Figure 54. From a comparison of the curves it is learned that greater variations occurred in inventory than in sales, and that in general the trends of the dollars and commodity volume of sales were similar.

Other comparisons may also be made by means of graphs. For example, the average selling prices in the enterprise under consideration may be compared with the general price level, as measured by index numbers of prices, in order to ascertain whether the trend of prices realized corresponds with the trend

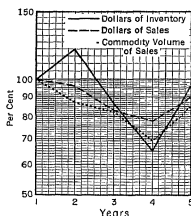


Fig 54 Chart of trends of dollars of inventory and sales and commodity volume of sales, for five years

of the general price level. For this purpose, the average selling prices may be calculated by

dividing the price volume by the commodity volume. The following tabulation results

	<u>Dollar Volume</u>	<u>Commodity Volume</u>	<u>Average Selling Price</u>
First year	\$250,000	1,360,520	\$ 183
Second year	240,000	1,194,882	200
Third year	207,500	1,127,110	184
Fourth year	195,000	944,969	206
Fifth year	225,000	1,164,092	193

The trend ratios of the average selling prices are as follows

First year	100%
Second year	109
Third year	101
Fourth year	113
Fifth year	105

The trend of the average selling prices may now be compared with the trend of an index of commodity prices. In using such an index, the analyst should satisfy himself that it has significance in the case of the particular enterprise under analysis. Let it be assumed that the index numbers of the X Index for five years and then relatives to the first year as the base are as follows

	<u>Index Numbers</u>	<u>Relatives (Base, First Year)</u>
First year	80.8	100
Second year	86.3	107
Third year	78.6	97
Fourth year	77.1	95
Fifth year	78.6	97

Tabulating the trends of the average selling prices in the illustrative case with those of the index gives the following

	<u>Relatives of Average Selling Prices (Base, First Year)</u>	<u>Relatives of Price Index (Base, First Year)</u>
First year	100	100
Second year	109	107
Third year	101	97
Fourth year	113	95
Fifth year	105	97

These trends may now be plotted as shown in Figure 55, from which it is seen that the price trend in the illustrative case was higher than the general price trend.

An index of the trend of prices in the industry in which the enterprise is engaged may also be available. Let it be assumed that such an index applicable to the illustrative case shows the following relatives for the period

First year	100
Second year	95
Third year	92
Fourth year	86
Fifth year	94

These trends may be compared with the trends of the prices in the illustrative case as in Fig 56, from which it is learned that

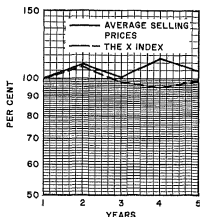


Fig 55 Chart of trends of average selling prices and the X index, for five years

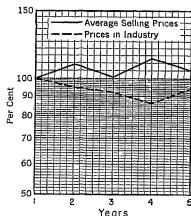


Fig 56 Chart of trends of average selling prices and prices in the industry, for five years.

in the industry the trend of prices was lower than in either the illustrative case or the general trend of prices. This fact tends toward a favorable opinion of the maintenance of prices in the case analyzed.

Illustrative Case

The use of trend ratios is illustrated by the case of The I Corporation, the comparative statements of which for 1956 to 1960 are shown in Figure 57. The trend ratios of the significant items in these statements are as follows:

THE I CORPORATION
Comparative Balance Sheet
December 31, 1956-1960

Assets

	1960	1959	1958	1957	1956
CURRENT ASSETS					
Cash	\$ 21,437	\$ 11,509	\$ 12,239	\$ 14,792	\$ 17,673
Marketable securities	20,479	13,674	13,499	20,647	20,733
Accounts receivable (less estimated bad debts)	100,446	89,476	84,778	67,883	54,301
Merchandise inventory	111,936	131,822	138,733	109,931	101,696
Prepaid expenses	11,871	8,588	8,547	9,545	10,627
Total current assets	\$274,173	\$284,749	\$234,816	\$222,188	\$210,390
PROPERTY, PLANT, AND EQUIPMENT					
Land	\$ 76,500	\$ 76,500	\$ 76,500	\$ 76,500	\$ 76,500
Building (less depreciation)	231,707	201,866	175,660	192,643	207,707
Furniture and equipment (less depreciation)	176,835	172,817	166,463	172,737	180,930
Total property, plant, and equipment	\$483,742	\$451,183	\$413,623	\$441,880	\$465,137
OTHER ASSETS					
Miscellaneous receivables	\$ 1,396	\$ 1,627	\$ 1,338	\$ 1,151	\$ 1,265
Total noncurrent assets	\$485,138	\$452,810	\$415,961	\$465,031	\$466,402
	<u>\$759,316</u>	<u>\$717,559</u>	<u>\$854,777</u>	<u>\$866,219</u>	<u>\$876,792</u>

Liabilities and Capital

CURRENT LIABILITIES					
Notes payable	\$ —	\$ —	\$ 5,000	\$ —	\$ —
Accounts payable	39,632	69,958	88,875	76,923	87,377
Accrued expenses	6,043	9,763	8,350	5,247	6,453
Dividends payable	35,000	35,000	—	—	—
Federal income tax payable	58,648	12,598	11,019	19,439	13,067
Total current liabilities	\$142,323	\$130,319	\$113,244	\$101,609	\$106,897

LONG-TERM DEBT					
Mortgage payable	\$ 80,000	\$ 80,000	\$ 25,000	\$ 25,000	\$ 25,000
Total liabilities	<u>\$222,323</u>	<u>\$210,319</u>	<u>\$138,244</u>	<u>\$126,609</u>	<u>\$131,897</u>
OWNERS' STOCK					
6% Preferred stock (par, \$100)	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Outstanding, 2,000 shares	400,000	400,000	400,000	400,000	400,000
Authorized, 1,000 shares	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Common stock (no par value)	36,993	7,240	16,533	38,610	44,895
Authorized, 50,000 shares	\$536,993	\$507,240	\$516,533	\$538,610	\$544,895
Outstanding, 40,000 shares	10,784	7,173	7,126	6,075	6,265
Total capital stock	\$494,070	\$481,042	\$480,622	\$490,743	\$497,311
RETAINED EARNINGS					
Total capital	<u>\$759,316</u>	<u>\$717,559</u>	<u>\$854,777</u>	<u>\$866,219</u>	<u>\$876,792</u>

Comparative Income Statement
For Years Ended December 31, 1956-1960

	1960	1959	1958	1957	1956
Sales (less discounts, returns, and allowances)	\$1,646,609	\$1,088,426	\$ 592,987	\$ 620,473	\$ 741,649
Cost of goods sold	1,099,138	672,070	280,528	272,676	398,552
Gross margin	\$ 587,471	\$ 416,347	\$ 312,464	\$ 347,897	\$ 343,117
Selling expenses	\$ 349,418	\$ 278,380	\$ 181,439	\$ 195,236	\$ 205,426
General and administrative expenses	103,868	95,489	91,957	97,632	95,620
Other expenses (less other income)	10,784	7,173	7,126	6,075	6,265
Net income before federal income tax	\$ 494,070	\$ 381,042	\$ 280,622	\$ 299,743	\$ 307,311
Federal income tax	123,401	35,305	31,942	48,154	35,806
Net income for the year	\$ 369,669	\$ 345,737	\$ 248,680	\$ 251,589	\$ 271,505
Units of product sold	\$ 64,753	\$ 22,707	\$ 20,923	\$ 28,715	\$ 22,731
	<u>4,694,973</u>	<u>3,350,746</u>	<u>2,123,712</u>	<u>2,218,099</u>	<u>2,359,680</u>

	1956	1957	1958	1959	1960
Receivables	100%	125%	116%	172%	185%
Merchandise inventory	100	108	134	132	118
Total current assets	100	106	112	126	130
Total noncurrent assets	100	95	90	97	104
Total current liabilities	100	95	106	121	133
Total liabilities	100	96	105	159	168
Capital	100	99	95	93	99
Sales	100	84	80	147	222
Cost of goods sold	100	68	70	168	266
Gross margin	100	101	91	122	171
Selling expenses	100	95	88	136	170
General and administrative expenses	100	102	96	100	109
Total expenses (including federal income tax)	100	100	91	123	163
Net income	100	122	92	100	285
Units of product sold	100	94	90	142	196

In this tabulation of trend ratios, fractions of a per cent have been dropped. Since the financial statements do not contain precise measurements, the application of refined mathematical methods to these data is not warranted. In fact, such refined computations are likely to be misleading because they give an impression of exactness which is not justified.

The trends may be plotted as shown in Figures 58 to 65. The significant facts shown by these charts are listed below.

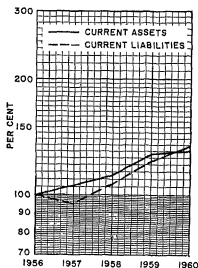


Fig 58. Chart of trends of current assets and current liabilities of The I Corporation, 1956-1960

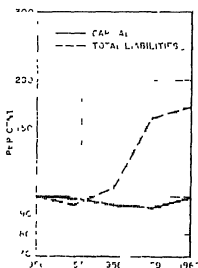


Fig 59. Chart of trends of capital and total liabilities of The I Corporation, 1956-1960

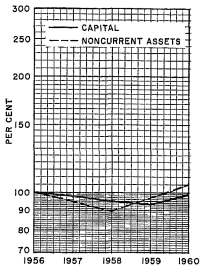


Fig 60 Chart of trends of capital and noncurrent assets of The I Corporation, 1956-1960

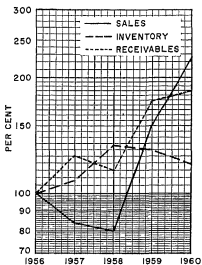


Fig 61 Chart of trends of sales, inventory, and receivables of The I Corporation, 1956-1960

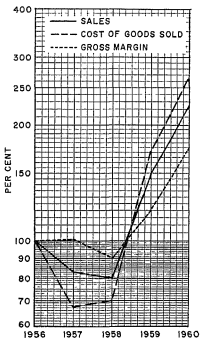


Fig 62 Chart of trends of sales, cost of goods sold, and gross margin of The I Corporation, 1956-1960

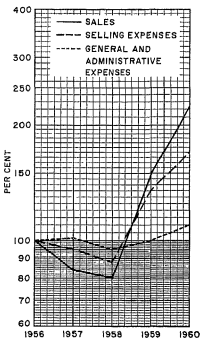


Fig 63 Chart of trends of sales, selling expenses, and general and administrative expenses of The I Corporation, 1956-1960

Figure 58 From December 31, 1956 to December 31, 1960, the trend of current assets was constantly upward. The trend of current liabilities during this period was downward at December 31, 1957, but after that date it was also constantly upward. The upward trend of current assets, however, was at a higher rate than that of current liabilities until December 31, 1960, when the trend

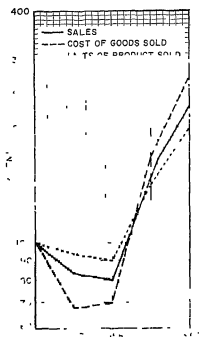


Fig 64 Chart of trends of sales, cost of goods sold, and units of product sold of The I Corporation, 1956-1960.

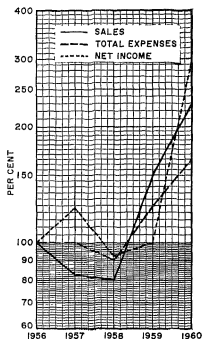


Fig 65 Chart of trends of sales, total expenses, and net income of The I Corporation, 1956-1960.

of current liabilities was upward at a higher rate. The indication is that the current position at December 31, 1960 was less favorable than before.

Figure 59 At December 31, 1957 both capital and total liabilities had declined, the decline being greater in total liabilities. The sharp upward trend of total liabilities after December 31, 1957 indicates expansion on creditor equity.

Figure 60 The relative trends of capital and noncurrent assets show no significant variation. At December 31, 1960, non-

current assets had increased at a slightly higher rate than had capital

Figure 61 Sales declined during 1957 and 1958 and rose sharply during 1959 and 1960. The trend of merchandise inventory attracts attention, since it increased when sales decreased and decreased when sales increased. The trend of receivables was upward at December 31, 1957, when sales had declined. After that date the trend of receivables correlates reasonably with that of sales.

Figure 62 The trend of cost of goods sold was generally similar to that of sales, although for 1957 and 1958 it was considerably lower than that of sales. The 1960 rate of increase of cost of goods sold is greater than that of sales, the effect of this is seen on the lower trend of gross margin.

Figure 63 The trend of selling expenses correlates fairly with that of sales. The lower rate of increase of selling expenses during 1960 is favorable. General and administrative expenses show little change.

Figure 64 The trend of units of product sold declined in 1957 and 1958 at a lower rate than that of sales, indicating a decrease in average selling prices. After 1958, the trend of units of product sold rose at a slightly lower rate than that of sales, indicating an increase in average selling prices.

Figure 65 Although sales declined during 1957, total expenses remained fairly constant. In 1958, total expenses declined with sales but at a lower rate, in 1959 and 1960, they rose with sales but at a lower rate.

Thus it is seen that a graphic history of the trends in a business may be obtained by plotting the curves of the trend ratios.

Financial Structure

The Structural Equation

Accounting regards the financial structure of a business as consisting of three elements—assets, liabilities, and capital. The relationship of the three is indicated by the equation

$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

This equation may be restated as

$$\text{Liabilities} = \text{Assets} - \text{Capital}$$

Or

$$\text{Capital} = \text{Assets} - \text{Liabilities}$$

That is, the assets are the sum of the liabilities and the capital, the liabilities are the difference between the assets and the capital, and the capital is the difference between the assets and the liabilities.

Since the liabilities and the capital represent the interests or equities in the business of the creditors and the owners, the equation may also be stated as

$$\text{Assets} = \text{Equities}$$

This equation may be expanded into the following form

$$\text{Assets} = \left. \begin{array}{l} \text{Creditors' } \\ \text{Equities} \\ \text{(Liabilities)} \end{array} \right\} + \left\{ \begin{array}{l} \text{Owners' } \\ \text{Equities} \\ \text{(Capital)} \end{array} \right.$$

This form results in the same equation as before, but with this difference. Here the liabilities and capital are looked upon as being of the same nature—that is, as representing the interests

of groups of financial contributors to the enterprise. From this point of view, the left side of a balance sheet may be regarded as a list of the property possessed by the enterprise, and the right side may be regarded as a statement of the sources from which the property has been obtained.

Balance Sheet a Detailed Statement of Financial Structure

The balance sheet has its basis in the fundamental equation, which, in fact, is an axiom on which modern accounting has been built. The equation, expanded into balance sheet form, may be stated as follows:

$$\begin{array}{rcl}
 \begin{array}{l} \textit{Assets} \\ \\ \text{Current assets} \\ \\ \text{Noncurrent assets} \end{array} & \left. \vphantom{\begin{array}{l} \text{Current assets} \\ \text{Noncurrent assets} \end{array}} \right\} & = \left\{ \begin{array}{l} \textit{Equities} \\ \text{Creditors' equities} \\ \quad \text{Current liabilities} \\ \quad \text{Long-term liabilities} \\ \text{Owners' equities} \\ \quad \text{Capital} \end{array} \right.
 \end{array}$$

Since the balance sheet is thus a detailed form of the fundamental, or structural, equation, it sets forth the financial structure of an enterprise. It states the nature and amount of each of the various assets, of each of the liabilities, and of the proprietary interest of the owner or owners.

Stating the nature of the assets, liabilities, and capital is not so difficult as stating their amounts. The amounts of the liabilities can be more readily stated than can those of the assets, for they usually represent the actual sums which the enterprise will have to pay, but the amounts of most of the assets, and consequently the capital,¹ are not values in the economic world but amounts computed on a conventional basis and subject to a considerable degree of personal judgment. However, the stated amounts of the assets, and especially the fixed assets, do give one an approximate idea of magnitude for the purpose of studying proportions, but it should always be borne in mind that they are approximations only and that, therefore, the results of computations in which they are used cannot be more than approximations.

¹ Sometimes designated the "net worth." See note, page 78.

Structural Relationships

One of the important principles of financial statement analysis is that certain reasonable proportions should exist among the various items in the financial structure of a business enterprise. This principle may be broadened somewhat for the present purpose to include not only the balance sheet items but also two of the items in the income statement—namely, sales and net income. Just as in a building the foundation must be strong enough to support the structure built upon it, and the roof must not be too heavy for the framework which supports it, so also the various factors in a business must bear reasonable proportions. If a building is topheavy, it will sooner or later collapse, similarly, certain kinds of top-heaviness in a business enterprise, such as, for instance, excessive liabilities, tend to cause insolvency. It is the purpose of this chapter to discuss some of the relationships which analysts usually test.

Relation of the Equities

A fundamental relationship which the analyst examines is the ratio of the equity of the owners to that of the creditors—that is, the ratio of the amount invested by the owners to the amount invested by the creditors. One of the arts of business management consists of buying goods on credit and selling them rapidly enough to obtain funds to pay for them, thus financing the inventory on creditors' money—in other words, operating on creditors' equity. The creditors are thus investors in the business, either voluntarily or involuntarily—involuntarily when payment is not made within the allotted time, a procedure quite common in periods of business depression. Another device for utilizing creditor equity is to borrow money at a certain rate of interest and to use it in one's business to yield a higher rate of return than that at which it was borrowed. This procedure of employing creditor equity has been named "trading on the equity" ²

² Hastings Lyon, in *Corporation Finance*, Part I, Chapter II. Boston: Houghton Mifflin Co., 1916, traced this expression to an English usage, saying "Its origin is from the expression 'equity of redemption,' which describes a mortgagor's right in the property he has mortgaged, that is, the right to get back the title he has pledged to the mortgagee as security for the capital advanced."

A considerable degree of risk is involved when a business is financed to a large extent by creditors. Any drop in sales volume or retarding of the velocity of collection of receivables may make it impossible for the business to meet its obligations. If the enterprise has borrowed money, it may have to pay interest on the loans, perhaps even in excess of its earnings, thus converting a possible profit into a loss. The temptation to operate on borrowed capital is very great, therefore the analyst seeks to determine to what extent the business has indulged in this practice. He does this by comparing the amount of the capital with that of the liabilities. The greater the investment of the owners as compared with that of the creditors, the stronger usually is the position of the latter.

Quantitative Measurement of the Relationship

Suppose that in a certain business the capital amounts to \$395,000 and the liabilities amount to \$112,000. Dividing the capital by the liabilities, one finds that for each dollar of liabilities the business has \$3.527+ of capital, in other words, the interest of the owners is about $3\frac{1}{2}$ times that of the creditors. A more common method used by analysts to express the quantitative relationship of this and the other factors in the financial statements is to state them in the form of a ratio. The ratio in this case is about $3\frac{1}{2}$ to 1. Since the amounts are usually not even numbers, and in order to express the relationship more conveniently, the best practice is to state the ratio in the form of a percentage. In the present case, the ratio would be stated as 353 per cent. This method of expression coincides with the method adopted in expressing other relationships in financial statement analysis.

Structural Ratios a Vertical Analysis

The ratios of the items in a set of financial statements to each other measure the relative magnitudes of the items and so are measures of the financial structure as of the date of the statements. They may therefore be called *structural ratios*, in contrast with the *trend ratios*, which measure the trends of the various items over periods of time. With respect to a comparative statement arrange-

ment, the structural ratios constitute a vertical analysis of the statements

Difference in Functions of Trend and Structural Ratios

Since little information about a business can be obtained from a single set of financial statements, the analyst usually works with several successive statements set up in comparative form. As has been explained, he analyzes such a comparative statement both horizontally and vertically, using both the trend and the structural ratios. The trend ratios to show whether the various items have increased or decreased and the rate of increase or decrease, and the structural ratios to measure the relationships between various items as of a certain date or for a certain period.

The analyst will obviously compute trend ratios from each of the successive statements. This is, however, not necessary in the case of the structural ratios. It is the function of the structural ratios to evaluate position, and the analyst usually desires to know the latest position. Therefore he usually computes the structural ratios only from the latest statements. In some cases he may also compute a structural ratio from a preceding statement, in order to compare previous position with present position. In addition, in some cases he may compute a certain structural ratio from each statement in the series in order to study the trend of the relationship under consideration. He should, however, bear in mind the distinction between the trend of a relationship as shown by a series of structural ratios and the trend of the individual items compared as shown by a series of trend ratios.

Interpretation of the Measurement

After the analyst has computed a ratio, he must interpret his measurement. This part of his work is more difficult, for the computation is merely a mechanical process of dividing one number by another, the interpretation of the measurement will require considerable ability. In short, what the analyst must decide is whether the relationship is satisfactory or not. He may base his decision on experience in studying many statements or on a comparison with normal or average ratios which have been arrived at

by experience or as the result of research. In any event, the decision will rest with the analyst, and the reliability of the decision will depend on his ability.

In interpreting the ratio of capital to liabilities, it must be decided whether or not the liabilities are in reasonable proportion to the capital, or, conversely, whether or not the capital is large enough to protect the creditors by absorbing possible losses. Since liabilities require liquidation when due, and often payment of interest, any retarding of the flow of income might cause embarrassment to the business. The condition becomes hazardous when the liabilities are large in proportion to the capital.

The question may now be asked as to the point at which the liabilities become excessive. In the case of this and all other ratios it is not possible to state a general rule regarding what constitutes normal proportions. That will depend on the circumstances. In a business which has little investment in fixed assets and thus requires only a small amount of permanent capital, the ratio of capital to liabilities may be low and still be satisfactory. However, in a large proportion of industrial enterprises, particularly in big business, it is reasonable to consider that the owners should normally take more risk than the creditors—that is, that the capital should be greater than the liabilities. If the ratio of capital to liabilities should be below 100 per cent, this fact would indicate the possibility of danger, and, therefore, the situation ought to be investigated. Investigation might reveal that no cause for alarm exists, on the other hand, it might disclose a serious situation. Thus it is seen that the ratio does not give a precise evaluation, rather, it acts as a signal pointing to a possible disproportion. This characteristic is found in all the structural ratios.

In the hypothetical enterprise discussed above, the ratio of the equity of the owners to that of the creditors is better than $3\frac{1}{2}$ to 1. If it is assumed that the business is of the more common industrial type, this ratio is well above the tentative minimum of 100 per cent which might be adopted for such an enterprise, so that the analyst would probably consider the indication favorable. However, if he found that the ratio of 353 per cent was the result of an upward trend of capital and a downward trend of liabilities, he would, in most cases, regard it much more favorably than if the reverse were true. It is necessary to consider not only the structural relationships at a particular time but also, what is equally

important, the trends of which these relationships are the result

Attention is directed to the fact that the proportions for capital and liabilities regarded as normal in one type of enterprise do not apply to other types. For example, in railroads and other public utilities, the creditor equity is often two-thirds of the total, because of the fact that a large proportion of fixed equipment is usually obtained through the issue of bonds.

Asset Forms of the Equities

Consideration should be given not only to the relative magnitudes of the equities of the owners and creditors but also to the form which the wealth invested has taken—that is, how much of each of the two general groups of assets, current and noncurrent, represents creditor equity and how much represents owner equity.

In the matter of equities, it may be said that the current creditors are at one end of the scale, the owners are at the other end, and the long-term creditors are in between. It is an accepted principle that the equity of the current creditors should be represented entirely by current assets, their investment is to be used only for short-term financing and is to be returned to them during the current period. At the other end, conservative practice expects the owners to supply the fundamental framework of the business—that is, the fixed or permanent assets. The position of the investment of any long-term creditors—in the case of a corporation, usually bondholders—is not quite so definite, some of their investment may be represented by current assets and some may be represented by noncurrent assets, depending on such circumstances as the maturity of the loan.

It is, of course, not intended to imply that it is possible to trace the disposition of the actual investments of creditors and owners, but rather to point out that certain principles which have been developed by experience may be applied in determining whether or not the magnitudes of the equities of owners and creditors relative to various kinds of assets are reasonable.

When no long-term liabilities exist, all the noncurrent assets and a considerable part of the current assets should in most cases be supplied by the owners, because some unexpected shrinkage in the value of current assets may take place, as, for example, when

receivables become uncollectable or when market prices of inventories drop. The investment of the owners in the current assets should in such an event cover any losses, thereby protecting the creditors. It follows that the greater the excess of owner equity over noncurrent assets, the greater is the amount of the investment of the owners in current assets and the stronger is the position of the creditors.

In cases in which long-term liabilities exist, the interpretation becomes more difficult, for, if these liabilities have a considerable time to run, the position may be satisfactory even if the capital is less than the noncurrent assets.

The ratio of capital to noncurrent assets is used to determine to what extent the owners have invested in the noncurrent assets. A ratio of 100 per cent indicates that the owners have supplied all of the noncurrent assets, any ratio above 100 per cent indicates that they have supplied part of the current assets. The higher the ratio is above 100 per cent, the more favorable is the position of the creditors.

This ratio acts as a supplement to the ratio of capital to liabilities, as is demonstrated by the following balance sheet of an industrial enterprise.

Current assets	\$ 2,000	Current liabilities	\$ 1,000
Noncurrent assets	16,000	Long-term liabilities	7,000
		Capital	10,000
	<u>\$18,000</u>		<u>\$18,000</u>

The ratio of capital to liabilities is 125 per cent. If it is assumed that this enterprise is of the more common industrial type, the ratio is above the tentative minimum of 100 per cent and might be regarded as satisfactory. However, upon examining the form which the wealth invested has assumed, by means of the ratio of capital to noncurrent assets, it is found that the situation might not be so satisfactory, since the ratio is but 62.5 per cent, indicating that 37.5 per cent of the noncurrent assets have been supplied by creditors.

"Fixed" or "Noncurrent" Assets

Misunderstanding sometimes arises in the use of the ratio of capital to noncurrent, or fixed, assets because of the fact that ac-

counting terminology is in various respects not standardized. The term *fixed assets* is sometimes used to designate the fixed, or permanent, investment in tangible assets of a business, and sometimes it is used to designate all the assets which are not current. It is therefore advisable to use the term *noncurrent assets* in the ratio under consideration in order to indicate that all noncurrent items are included in the comparison with capital.

"Tangible Net Worth"

The stated amount of the intangible assets is conventionally deducted by analysts from both the assets and the capital when an analysis is made, for the reason that the valuation placed on intangibles at some time in the past gives no significant information at a later date. In order to indicate that the intangibles have been eliminated from consideration, some writers use the expression *tangible net worth*, indicating that the intangibles have been eliminated in the computation of the capital. However, since it is customary to eliminate the intangibles in financial statement analysis, this designation is rather superfluous and is not used in the present volume.

Overexpansion

In periods of business prosperity or inflation, enterprises tend to expand their plants and equipment, often at an unjustified rate. Later, when recession and deflation occur, they find themselves with too great an amount of equipment. As a result, readjustments are necessary which cause loss to the enterprise. The temptation to expand unduly is probably second only to the temptation to trade excessively on the equity. Too rapid expansion is often the cause of too generous a use of creditor investment with resulting heavy liabilities and interest expense for money borrowed. Consequently, the wise business executive will use intelligence and foresight in planning an expansion, and he will, if possible, avoid excessive use of creditors' money. Such planning involves one of the niceties of successful business management. A company may become inefficient if it does not secure modern equipment, but, on the other hand, it may become insolvent if an expansion is not justified by a later increase in the volume of

business A decrease in the ratio of capital to noncurrent assets over a period of time may be indicative of an expansion of fixed property and equipment by the too free use of creditor equity, a condition which the analyst will regard as unsatisfactory

Form of Current Creditor Equity

Since the creditors look to the current assets of a business for the satisfaction of their claims, a universally accepted comparison in financial statement analysis is that of the claims of the current creditors with the wealth available for the payment of their claims. The comparison is made by the use of the ratio of current assets to current liabilities. This ratio, commonly called the *current ratio*, has since the early days of financial statement analysis been accepted as a measure of liquidity, or debt-paying ability—and rightly so. But, of course, it is not, as it was formerly considered, the only measure with which the analyst is concerned, and it should never be the only measure used in any specific case.

Naturally, the analyst expects to find in a solvent business a considerable excess of current assets over current liabilities, because, while the debts are rarely reduced in other ways than by payment, the assets available to liquidate them may be subject to shrinkage. For example, an unexpectedly large amount of the receivables may become uncollectible, or some of the merchandise may become obsolete or unsalable, or unexpected losses may occur in the investment in marketable securities. However, as is the case with all the ratios used by the analyst, it is quite impossible to make a fixed rule as to what is a satisfactory ratio. Obviously, some types of business normally have less current assets than others, although their liabilities may be just as great, and they therefore have a lower current ratio.

Many years ago bank credit men came to the conclusion that the current ratio should be at least 200 per cent to be satisfactory. This opinion has persisted until comparatively recent times, and it is still held by some. It has some degree of logic behind it, for it is reasonable to expect, in general, that, if the current assets are twice the current liabilities, the relationship is not unreasonable. On the basis of more recent investigations, however, most analysts today agree that one enterprise may be in perfectly good current position with a ratio of less than 200 per cent while another may

be in an unsatisfactory condition although it has a ratio of over 200 per cent

The credit man is especially interested in the current ratio, for this ratio tests the probable ability of a business to meet its obligations in the near future. The investment analyst, on the other hand, is vitally interested in the probable success of the enterprise over a long period of time. The credit man is primarily interested in the short-range study, while the investment analyst is primarily interested in the long-range study. However, the competent credit man is also interested in the future of the business, for he has an eye on profitable relations in the future, and the investment analyst, too, is interested in its present position, for the present is but a prelude to the future, and coming events may already be casting their shadows. The credit man should not overemphasize the study of current position nor should the investment analyst neglect it.

Measurement of Liquidity

One frequently hears it said that the working capital of a business represents the amount of current assets which the enterprise has in excess of the claims of the current creditors and with which, therefore, it is free to work. From this statement it would appear that the greater the amount of working capital, or net current assets, the greater the degree of liquidity of the business, and so it is alleged that the amount of working capital is a measure of liquidity.

Let it be assumed that Company *A* has a working capital of \$30,000 and that Company *B* has a working capital of \$10,000. If the size of the working capital is a measure of liquidity, Company *A* must be three times as liquid as Company *B*, but the statements of these companies show the following:

	<u>Company A</u>	<u>Company B</u>
Current assets	\$90,000	\$15,000
Current liabilities	60,000	5,000

A comparison of the dollars of current assets and current liabilities of Companies *A* and *B* indicates that for each dollar of current liabilities Company *B* has \$3 of current assets, while Company *A* has only \$1.50 of current assets. Although Company

A has a working capital 3 times that of Company *B*'s, its current assets are only $1\frac{1}{2}$ times its current liabilities, whereas Company *B*'s current assets are 3 times its current liabilities

Liquidity in a business is the potential ability to meet obligations. A measure of this ability is afforded not by the amount of working capital but by a comparison of the amount of wealth available to pay debts with the amount of the debts to be paid. Thus, the current ratio is a logical measure of liquidity. In the above case, Company *B* has a current ratio of 300 per cent, while Company *A* has a current ratio of only 150 per cent, although it has a larger working capital than Company *B*. Obviously, it is the *ratio* of current assets to current liabilities and not the *difference* between current assets and current liabilities that affords a measure of liquidity.

Sometimes it is alleged that changes in the amount of working capital of a business give an indication of changes in liquidity. The following illustration will dissipate this belief.

	December 31	
	First Year	Second Year
Current assets	\$100,000	\$200,000
Current liabilities	25,000	100,000
Working capital	75,000	100,000
Current ratio	400%	200%

Although the working capital rose $33\frac{1}{3}$ per cent, the ratio of current assets to current liabilities declined 50 per cent. A comparison of the successive working capitals in this instance would give entirely misleading information.

The amount of working capital, however, measures the extent to which the current debts may be increased without exceeding the current assets, or how much the current assets may shrink before they are equal to the current liabilities, but, inasmuch as even an approach to equality in these two entities would in most cases tend to imply insolvency, such a measure does not appear to be useful in the case of a going concern.

Measure of Working Capital

Working capital is that portion of the monetary measure of current assets not supplied by current creditors. When no funded debt exists, the working capital is the equity of the owners in the

current assets as distinguished from their equity in the fixed assets. The term, having certain commonly accepted but incorrect connotations, is not a particularly good one, but, since this term has become deeply rooted in financial parlance, a change of terminology is not feasible. Therefore its use may be continued if the true significance of the expression is borne in mind.

A measure using the amount of working capital may be obtained by comparing working capital with current liabilities. This comparison gives the ratio of the equity of the owners and/or long-term creditors in the current assets to the equity of the short-term creditors in these assets.

Let a case be assumed in which the current assets amount to \$1,000 and the current liabilities amount to \$400. The working capital is \$600, and the ratio of working capital to current liabilities is 6 to 4, or $1\frac{1}{2}$ to 1, or 150 per cent. The current ratio in this case is 250 per cent. The current ratio and the ratio of working capital to current liabilities both serve as measures of liquidity but from different angles. It is, of course, not necessary to use both.

"Acid Test"

A ratio which serves as a supplementary check on liquidity is the so-called "acid test." If merchandise, usually the least liquid current asset, is eliminated, and the "quick assets"—cash, temporary investments in marketable securities, and receivables—are compared with the current liabilities, a comparison is made of the current debts with the amounts that will be available in the very near future for their liquidation. The testing of these proportions has become known as the "acid test," because it implies the drastic assumption that only the three assets mentioned will be available to pay the current liabilities, whereas, at least in most cases, a portion of the merchandise will be converted into cash before all the current debts mature. Bankers have often held that in a trading concern an acid-test ratio of 100 per cent, indicating that the quick assets are equal to the current liabilities, is satisfactory.

The acid test may modify an opinion arrived at by the use of the current ratio, as will be seen from the following case:

<u>Current Assets</u>		<u>Current Liabilities</u>	
Cash	\$ 1,000	Accounts payable	\$7,000
Receivables	2,000		
Merchandise	11,000		
	<u>\$14,000</u>		<u>\$7,000</u>

The current ratio of 200 per cent would in most cases be considered satisfactory. This opinion, however, would be modified by the acid-test ratio of about 43 per cent, which would in many cases be interpreted as indicating an undue amount of merchandise in the current assets or, conversely, an unduly small amount of quick assets. However, again, the interpretation will depend on circumstances. If it is expected that the merchandise will be sold immediately, the opinion will be different from what it would be if a longer sales period were expected.

Inventory and Sales Volume ✓

It is logical to expect a business to carry an inventory of merchandise which is in reasonable proportion to the sales volume. An enterprise with sales of a million dollars per annum will usually require a larger inventory than one in the same line of business with sales of ten thousand dollars per annum. However, in order to pass judgment as to whether the inventory is normal, it is necessary to be familiar with the requirements of the type of business under consideration. Control of the inventory is one of the most difficult problems of management, the inventory must be large enough to meet the demands on the business, but it also must not be too large, since overstocking results in increasing such expenses as warehousing and interest on borrowed funds and prevents the flow of cash into the business through sales. Also there is danger that the goods will deteriorate or become outmoded.

A study of the relation of inventory to sales volume will often afford a measure of sales efficiency. It is the desire of the merchant to have the smallest possible inventory that will efficiently take care of all demands on it, so that, when an enterprise is found which conducts a large volume of business on a comparatively small inventory, it will be concluded that it has a high degree of merchandising efficiency.

In comparing the dollar amount of sales with the dollar value

of the inventory, it should be remembered that these two amounts are on different bases, inventory being valued conventionally at cost—or market, when lower than cost—and sales being valued at selling price—that is, cost plus gross margin. Also, a comparison of operations for two periods requires a knowledge of business conditions. For example, a change in the price level at which new stock is acquired would change the relation between sales and inventory. It is conceivable to have a case in which the dollar relationship has changed to a great degree although no change has taken place in physical volume of sales or inventory. The ratio of sales to inventory is, at best, an exceedingly rough measure.

Another consideration that confronts the analyst is whether or not the inventory as of the date of the balance sheet is representative. Almost all businesses have seasonal variation, and the inventory at balance-sheet date may represent a very high or a very low point. The use of an average inventory, if available, is more satisfactory.

Turnover of Inventory

The ratio of sales to inventory has sometimes been regarded as indicating the turnover of inventory, or the number of times the inventory is disposed of. Such an assumption, however, is incorrect, because the amounts of the two items, as has been stated above, are not computed on the same basis. To obtain a more satisfactory measure of turnover of inventory, the cost of the goods sold should be compared with the inventory, preferably the average inventory. It is, however, usually not possible for an external analyst to obtain a more accurate average than the arithmetic mean of the initial and final inventories. This figure may be used if it is reasonable to assume that the amount of inventory carried by a particular enterprise is fairly uniform during the accounting period.

In spite of the facts mentioned above, the ratio of sales to inventory may be used as a substitute for the ratio of cost of goods sold to average inventory when the cost of the goods sold is not available. It may serve as an approximate measure of turnover, but the analyst should always be conscious of the fact that it is but a rough approximation.

Receivables and Sales Volume

The amount of uncollected receivables should bear a reasonable proportion to the sales volume. The existence of an unduly large amount of receivables indicates that too large an amount of the wealth of the enterprise is in the form of receivables. Sales volume can be greatly increased by liberal extension of credit, accordingly, in order to beat competitors, credit men are often tempted to extend credit beyond the usual terms of the business. Also, particularly in times of business depression, they may seek to increase business by being lax in pressing collection. Such policies, however, have the effect of tying up wealth of the business in the form of receivables when it should be in other forms.

The ratio of sales to receivables is materially affected by the extent of sales activity immediately before the closing of the books. An unusually low ratio would indicate that the amount of receivables is high in comparison with sales. However, it does not necessarily follow that collections have been slow. Upon investigation it might be found that during the last month of the period business had been extremely good, with the result that the receivables are high, but, since the receivables are not yet due, the situation is quite satisfactory. Thus, again, it is seen that the ratio does not give a precise evaluation of position, it acts merely as an indicator which needs to be interpreted in the light of the facts in the case under consideration.

Return on Capital

The ultimate test of any business is the rate of income earned on the capital invested. The return on capital may be measured by the ratio of income to capital. This test has been given much attention in recent years, particularly in the field of management, where it is used to determine whether a certain goal has been achieved or whether an alternative use of capital has been justified. It is also employed as a basis for various managerial decisions.

Capital • Equities or Assets

In employing the ratio of income to capital, what constitutes capital will depend on the objective of the measurement. If the objective is to measure financial success, the capital base used may be either the equity of the common stockholders, the equity of preferred and common stockholders, or the equity of the stockholders and bondholders.

If, however, the objective of the measurement is to appraise the efficiency of management in the use of the capital entrusted to it, the capital base employed will be either the total assets or the assets used in operations. When the assets constitute the capital base, either their cost or cost less depreciation may be used. Cost is the original investment that produced the return, while cost less depreciation may be regarded as the current state of the investment. To carry this reasoning further would require the adjustment of the figures to the current price level.³

Income Consistent with Capital Base

Income for the purpose of computing return on capital will depend on the base employed. If the return is based on assets, consistency requires that nonoperating or nonrecurring income be excluded. On the other hand, interest on long-term debt, which is a payment for the use of capital, is added back to income to appraise the performance of operating management in the use of assets. Similar reasoning would require that income before income taxes be used. When the computation is based on the return to the stockholders, the net income for the year should be employed, since to the stockholders belongs the residual after all deductions.

³ In a study of 44 companies made by the National Association of Accountants, it was found that, as the investment base, 28 used total assets available, 4 used total assets employed, 6 used stockholders' equity plus long-term debt, and 7 used stockholders' equity. The total is 45 because one company used two bases. Of these companies only 2 took price level changes into consideration. *Return on Capital as a Guide to Managerial Decisions*, National Association of Accountants Research Report No. 35, December 1, 1959, page 8. This report contains an excellent bibliography, pages 105-107.

Sales and Fixed Assets

Some writers have advocated the use of the ratio of sales to fixed assets, explaining that, since the investment in fixed assets is made for the ultimate purpose of producing sales, the ratio of the sales to fixed assets is a measure of the achievement of that purpose.

Although no sales could be made without the possession of the fixed assets, these assets do not produce the sales. The amount of the sales is the result of many factors—the ability, efficiency, and courtesy of the salesmen, the quality and style of the goods, favorable markets, strategic location, demand creation, and so forth. Also, the number of dollars of sales is not necessarily a measure of ultimate achievement, for this figure affords no indication of the profitableness of the sales. Since the sales are dependent on factors other than fixed assets, no direct relationship which can be significantly measured by the ratio exists between sales and fixed assets.

Also, the total of the fixed assets is usually an extremely complex item affected by the price level at the date of acquisition of the assets, the length of time that has elapsed since acquisition, depreciation policies pursued, replacements and betterments, and so forth. It is therefore usually not feasible to relate the stated amount of fixed assets to dollars of sales with results that are significant.

The ratio of sales to fixed assets has been used in the comparison of enterprises. It is true that an enterprise which bought its plant at a low cost is in a stronger competitive position than one which bought a similar plant at a high cost. However, the ratio of sales to fixed assets is no definite measure of such an advantage, this can be measured only by empirical methods. In certain cases where the analyst has a complete analysis of the fixed asset accounts, so that all the factors involved in the financial measurement of these assets are available, the ratio may afford some rough indication which has significance to him, but it is not recommended for general use.

Summary of Structural Ratios Discussed

The structural ratios that have been discussed and found useful are the following

- Capital to liabilities
- Capital to noncurrent assets
- Current assets to current liabilities (current ratio)
- Working capital to current liabilities
- Quick assets to current liabilities (acid test)
- Sales to inventory
- Cost of goods sold to average inventory
- Sales to receivables
- Net income to capital invested

This list is not to be considered to contain the minimum number of ratios to be used, for the analyst would not necessarily use all of them in any particular case. Nor is it to be considered exhaustive, the analyst should feel free to make comparisons between any of the financial statement items, as long as he is certain that there is between any two entities compared a relationship the measurement of which has significance. Obviously, for example, the use of the ratio of capital to cash would be meaningless, because it would yield no significant information. It is certain that a corporation with a capital of two million dollars should have more cash available than \$100, but who can say, merely on the basis of the capital, just what would constitute a normal amount of cash for such a business?

“Window-Dressing”

Businessmen know that, when a credit man examines a balance sheet, he usually computes the ratio of current assets to current liabilities and that the maintenance of this ratio at a satisfactory figure will probably have a bearing on the granting of credit. For this reason the affairs of an enterprise shortly before the balance sheet date are often conducted in such fashion as to create a satisfactory showing. Such manipulation is commonly known as “window-dressing.”

One of the devices used to create a high current ratio is to avoid replenishing the inventory for a period preceding the closing

of the books, for the purchase of merchandise on credit would increase both the current assets and current liabilities by the same amount and thus lower the ratio. For example, let it be assumed that a business has \$3,000 of current assets and \$1,500 of current liabilities. The ratio is 2 to 1. If the business should purchase \$1,500 of merchandise on credit, the current assets would be \$4,500, and the current liabilities would be \$3,000, a ratio of only $1\frac{1}{2}$ to 1. The analyst may discover the practice of delaying inventory replenishment if he finds the inventory unreasonably low for the volume of business transacted or in comparison with the inventories of previous years.

Among other devices known to have been used to enhance the appearance of a balance sheet are holding the cash receipts book open after the closing date, omitting information regarding contingent liabilities on notes and accounts discounted, including in accounts receivable items of goods billed for which shipment has not been consented to by customers, also, omitting from inventory merchandise already in stock and excluding the liability for it from accounts payable. When the statements bear the opinion of a certified public accountant, the probability of the existence of these manipulations wanes. However, the analyst should always be on the lookout for anything that appears suspicious.

Illogical Comparisons

A tendency exists on the part of some writers on financial statement analysis to use ratios which are alleged to be infallible indicators of the condition of a business but which have no logical basis. Such writers usually offer no coherent explanation as to why their invention works, the reader apparently being expected to accept it on faith.

For example, an illogical ratio that has been suggested is that of liabilities to sales. In this ratio, the total amount of liabilities which a business has on the last day of a period—say, December 31—is compared with the total dollars of sales during the period—say, a year. It has here been shown that a relationship exists between sales and inventory—the amount of goods in stock to carry on sales—and between sales and receivables—the amount still due from customers on the sales made to them during the year, but there is no reason why the amount which happens to be

due to creditors on the last day of that year should be in any definite proportion to the dollars of sales made during the year, particularly when the debts may and probably do include amounts owing for items other than the purchase of merchandise. As one accountant once said, "There is hardly more logic in this procedure than in dividing the telephone number of a house by its street number to obtain an estimate of the wealth of the occupant of the house, or in dividing a man's weight by his height to determine his age!"

Various comparisons of statement items with working capital have been suggested. Such a ratio is that of inventory to working capital. It has been held that this ratio shows the proportion of working capital represented by inventory. However, working capital—the excess of current assets over current liabilities—cannot be split into components as alleged. If it was the inventor's intention to determine whether or not the inventory is at a satisfactory figure, he might compare it with sales. The inventory might also be related to the total current assets to show the proportion of current assets which is represented by inventory.

Perhaps the ratio of inventory to working capital is intended as a substitute for the acid test. As has been shown, the latter is the ratio of the quick assets (current assets minus inventory) to the creditors' equity in the current assets, the ratio of inventory to working capital would be the ratio of the inventory to the owners' equity in the current assets (in the absence of any fixed liabilities). The traditional safe minimum for the acid test is 100 per cent, for the ratio of inventory to working capital, 100 per cent would be the safe maximum, because any percentage above 100 would indicate that the current liabilities were greater than the quick assets. The acid test is quite direct and understandable, the ratio of inventory to working capital is indirect and vague, and therefore its use is not recommended.

The ratios of sales and net income to working capital have also been suggested as measures. As in the case of the ratio of capital to cash, which has been mentioned above, no significant relationship exists between either the sales or the net income and the excess of property of the business in the current form over its current debts. It is impossible to state what the size of the working capital should be on the last day of a period when the net income or the sales for the period are at a certain figure.

Another ratio that has been suggested is that of current assets to fixed assets. It is explained that the larger the proportion of current assets, the stronger is the financial position of the business. The proponents of this ratio admit that the proportion will vary for different lines of business, but they allege that in the same line of business the enterprise with the greater proportion of current assets is the sounder.

The basis of measurement of the fixed assets, as in the case of the ratio of sales to fixed assets, introduces so many variables into the relationship of current assets and fixed assets that interpretation is hardly possible, particularly in the comparison of enterprises, which appears to be the use for which the ratio is especially intended. Moreover, this ratio is materially affected by the policy in regard to fixed assets pursued by the management. If the enterprise should rent its building, the ratio would be more favorable than if it owned the building, for the fixed assets would be less. It does not follow, however, that a business which rents its building is necessarily in more favorable condition than one which owns its building.

It should also be observed that the total of the current assets gives little usable information. Rather, the proportions of the various current assets to the total and their relation to other factors in the statements, measured by such ratios as have been discussed in this chapter, are useful to the analyst.

When comparisons are made by the use of ratios, not only should the items compared bear a clear and logical relationship, but that relationship should be simple and readily understandable. Relationships which are too complex to be readily comprehended should be avoided.

Index of Ratios

It has been held that a series of ratios may be consolidated into an index of financial condition. The method suggested is to apply arbitrary weights to the ratios selected and to combine them into an index number. This procedure implies a homogeneity and precise significance which the ratios cannot possibly possess. If such a procedure could logically be followed, it would be highly desirable, but it is contrary to the nature of the financial statement data and so must be regarded as a fantastic dream. However, it

shows how seductive statistical methods may become to one who does not properly understand them

Trends of the Structural Ratios

As stated above, not only the trends of the financial statement items as shown in Chapter 10, but also the trends of the structural ratios, may be studied. For example, let it be assumed that the following are the amounts of the current assets and current liabilities of a certain company as of December 31 of five consecutive years

<u>December 31</u>	<u>Current Assets</u>	<u>Current Liabilities</u>
First year	\$13,650,560	\$3,604,974
Second year	16,120,327	6,298,282
Third year	14,021,668	7,100,817
Fourth year	10,124,397	1,364,265
Fifth year	9,816,057	958,307

The current ratios are as follows

<u>December 31</u>	
First year	378%
Second year	256
Third year	197
Fourth year	978
Fifth year	1031

These ratios may be plotted as shown in Figure 66, which reveals the trend of the relationship of current assets to current liabilities. To determine the cause of the trend of the relationship, it is necessary to examine the trends of the two variables involved, these trends are as follows

<u>December 31</u>	<u>Current Assets</u>	<u>Current Liabilities</u>
First year	100%	100%
Second year	118	170
Third year	102	195
Fourth year	77	38
Fifth year	75	27

The trends may be plotted as shown in Figure 67

The trend of the structural ratio in Figure 66 is explained by the trend of the two variables in Figure 67. When the current ratio rose to the height of 1031 per cent on December 31 of the fifth year, it rose because both the current assets and current

liabilities decreased between December 31 of the fourth year and December 31 of the fifth year, but the current liabilities decreased at a higher rate than the current assets. This example illustrates

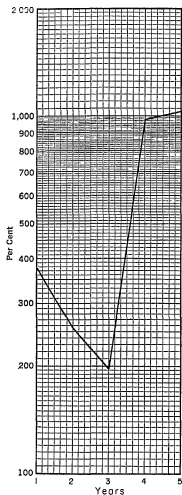


Fig 66 Chart of trend of current ratios for five years

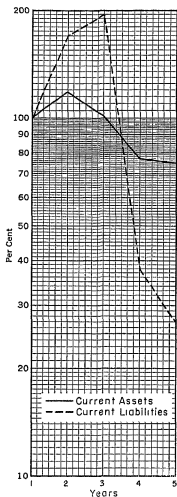


Fig 67 Chart of trends of current assets and current liabilities for five years

the complementary nature of the horizontal and vertical analyses, the structural ratio indicates that the current position improved and the trend ratios explain why

Operating Ratios

The vertical ratios—that is, the ratios between items in one set of statements—may be classified as structural ratios and operating ratios. The structural ratios are those which have been discussed in the present chapter, they are the relationships between various balance sheet items and also between certain of the balance sheet items and two income statement items—namely, net sales and net income. The operating ratios are those discussed in Chapter 8—the ratios of the various income statement items to net sales.

The ratios between balance sheet and income statement items may be classified as structural ratios or operating ratios, or they may be placed in a third class. They have here been classified with the ratios between balance sheet items (structural ratios) for convenience, since they are used in a manner similar to these ratios.

Interpretation of the Measurements

In the six preceding chapters, various measuring devices commonly used in the analysis of financial statements were presented. With reference to statements in the comparative form, these analytical devices may be classified in two categories—horizontal and vertical. In addition, two units of measurement are used—dollars and percentages.

Horizontal, or Dynamic, Measures

The horizontal measuring devices show changes with the passage of time. The following have been discussed:

MEASURES IN DOLLARS

- Comparative balance sheet
- Comparative income statement
- Statement accounting for variation in capital
- Statement accounting for variation in working capital
- Statement accounting for variation in cash
- Statement accounting for variation in net income
- Statement accounting for variation in gross margin

MEASURES IN PERCENTAGES

- Trend ratios
- Comparative balance sheet showing percentages of increase and decrease
- Comparative income statement showing percentages of increase and decrease

Vertical, or Static, Measures

The vertical measuring devices are in terms of percentages and show the magnitudes of certain items in a set of statements relative to other items. They are as follows:

- Structural ratios
- Common-size balance sheet
- Common-size income statement

Analytical Devices as Tools

The analyst will not necessarily use in any particular study all the analytical devices enumerated above. These various devices are but tools from among which he will make a judicious selection for his requirements. Some analysts are inclined to employ too ponderous an apparatus for their work, a procedure which reminds one of the mathematician Felix Klein's criticism of a fellow mathematician who, he said, seemed to be shooting at sparrows with cannons.

What tools shall be employed in any specific instance will depend on the objective. If it is to study the proportions in one set of statements, the work will consist of a computation of vertical ratios. If it is to make an intensive analysis of the changes during one period, the analyst may study these changes in terms of dollars by means of comparative statements or in terms of percentages by means of the percentages of change computed from the comparative statements. If he seeks to make a long-range study, he will use the trend ratios as his principal tool, supplementing them with structural ratios for perhaps the last period under consideration. In studies covering a number of periods, the analyst will not compute vertical ratios for all the periods, nor will he prepare for each period statements accounting for variation in working capital and net income.

Use of the Measurements

In interpreting the financial statements, the analyst uses accounting data which show the financial status of a business in the realm of accounting conventions to obtain an opinion concerning

the financial condition of that business in the economic world. The measurements computed from the statements are not precise measures of what he is seeking. Just as the economist would like to measure the fundamental forces governing economic behavior, so the statement analyst would like to measure the fundamental forces underlying a business enterprise, but, like the economist, the statement analyst is usually not able to make precise measurements. The analyst who regards his financial statement ratios as precise measures on a par with the measures used in the physical sciences will probably not formulate conclusions which are valid.

The competent analyst regards his measurements as indicators which call attention to any factors that are out of proportion or any extreme variations that have taken place. Having taken notice of a disproportion or unusual variation, he proceeds to seek an explanation for it. In some instances, the disproportion or variation may be satisfactorily explained, while in others it may be indicative of an abnormal condition. The various ratios are, therefore, not ends in themselves but rather means to an end. They are mathematical aids for simplifying relationships so that the mind may readily grasp them.

The experienced analyst may conceivably form opinions from financial statements without perceptibly going through the motions of making mathematical calculations, for he makes them subconsciously. He is able to recognize maladjustments in a business by means of a sense of proportion developed through experience. The computation of ratios and the use of other measuring devices help to bring out facts which might otherwise be overlooked, but the actual interpretation of financial statements is a mental process for which there is no mechanical substitute.

Some persons would seek to reduce statement analysis to a mechanical process, but the very nature of the material makes it impossible to do so. The analyst must modify the indications of his mathematical aids in accordance with his estimate of the degree of precision of the data before him. Then he uses them as guides which point the way to matters to be investigated. The explanation of unusual proportions or variations constitutes the interpretation of the measurements.

Use of External Data

No enterprise operates within a vacuum, its success is dependent upon many factors outside it. If the analyst considers only internal data, he may obtain a wholly unreal picture. Therefore he must supplement the measurements obtained from the financial statements with data from the business world at large.

The external data employed by the analyst may be divided into two classes: (1) information relating to general business conditions, and (2) information regarding conditions in the particular industry in which the enterprise under consideration is engaged. For example, a decline in income due to a decline in the sales prices realized in a certain business is a rather unfavorable tendency. However, it appears less unfavorable if the analyst finds that the general price level has declined, and still less unfavorable if prices in the industry in which the enterprise is engaged have declined more than in the business under consideration. In similar manner, an increase in income is greatly detracted from if the future prospects in the industry are questionable, as, for instance, when one type of product is likely to be superseded by others or when one kind of service may be supplanted by another.

Weaknesses in Financial Structure

It has been shown that financial statement analysis is largely a study of variations in the statement items and a measurement of the proportions between various items. When any of them are out of proportion, the measuring devices call attention to the disproportion, and the analyst seeks to find the reason for it. Such disproportions usually indicate weaknesses in the financial structure and may be symptoms of pathological conditions. Just as the physician readily recognizes the symptoms of human ailments, so the statement analyst should be able to recognize the ailments of business enterprises. Since this ability can be obtained only by practice, the would-be analyst should follow a laboratory method in his studies by analyzing as many statements as possible. He will thus develop facility in recognizing the more common disproportions.

Every business enterprise has its own peculiar problems, even

as each human being has his idiosyncrasies, but, just as certain problems are common to all human beings, so are certain problems common to all enterprises. The points at which weaknesses in the financial structure most commonly occur and which should therefore be made the primary objects of scrutiny in an analysis are the following:

- Receivables
- Inventory
- Noncurrent assets (particularly the fixed property and equipment)
- The equities
- Net income

The interpretation of the measurements of these factors in the structure will now be discussed.

Interpretation of the Position of Receivables

It has been shown that the position of the receivables is measured in relation to sales—that is, by the ratio of sales to receivables. If the ratio is unusually low, it may indicate that the receivables are too large in proportion to the amount of sales.

Take, for example, a case in which the trade receivables amount to \$62,130 on December 31, of a certain year, and the total sales for the year are \$376,045. The ratio of sales to receivables is 605 per cent. It may be that the analyst considers the normal ratio to be about 980 per cent. He would accordingly, in the absence of any other explanation, conclude that the collection velocity of the business is much too low.

This condition may be expressed in another way. A ratio of 605 per cent indicates that the receivables are collected about six times a year, or there is a turnover of six times. Assuming that the year contains 300 business days, the receivables are collected in about 50 days. A ratio of 980 per cent would indicate that the normal collection period is somewhat less than 30 days. Therefore the hypothetical business is about 20 business days slow in collecting receivables.

This result may also be reached in the following manner. If the sales for the year amount to \$376,045, and it is assumed that there are 300 business days to the year, the average day's sales are about \$1,250. By dividing \$62,130, the trade receivables on December 31 of the year under consideration, by \$1,250, the

average day's sales during the year, it is found that the receivables represent approximately 50 days' sales. If the terms are 30 days, the enterprise is about 20 days slow in collecting receivables.

The day's sales in receivables is a convenient substitute for the ratio of sales to receivables because it can be interpreted more easily. It should, however, be remembered that this is a rough approximation since it makes the assumption that the sales are evenly distributed throughout the year, which may not be so. There is also a discrepancy in the calculation in that the average sales per day is computed on the basis of business days whereas the terms of sale include Sundays and holidays. The days' sales in receivables has significance only when there is a considerable difference between it and the terms granted.

In studying the ratio of sales to receivables, the object is to determine what proportion of the sales during a period remain unpaid as of the last day of that period. It is preferable, therefore, to use the gross amount receivable from customers without deduction of the allowance for doubtful accounts. The deduction of this allowance would raise the ratio and give an impression that more receivables had been collected than is actually the case.

To simplify the foregoing discussion, two factors were omitted: sales made on a cash basis and cash discounts. If sales on a cash basis are included in the sales figure, a rough allowance may be made for them, and, if cash discounts are offered to customers, the average collection period will be shortened. The external analyst, unfortunately, does not usually have this information and can only estimate such matters, a fact which shows the lack of precision of the measurement.

Levels of Analysis

If the analyst desires to determine, as far as possible, the fundamental causes of any disproportions or extreme variations in financial statements, he will have to carry out his analysis on what may be regarded as four levels of analysis. These levels are as follows:

- 1 The structural ratio level
- 2 The trend ratio level
- 3 The level of analysis of the variables
- 4 The economic level.

The conduct of an analysis of sales and receivables on these four levels will now be discussed

Structural Ratio Level of Analysis

The following are the sales and receivables of a certain business

FIRST ILLUSTRATION

	<u>Sales</u>	<u>Receivables, December 31</u>	<u>Ratio of Sales to Receivables</u>
First year	\$425,972	\$80,250	531 %
Second year	410,640	82,128	500

This analysis of the relation of sales and receivables shows that the relationship on December 31 of the second year was less favorable than on December 31 of the first year, since the ratio declined, indicating that the volume of receivables was greater on December 31 of the second year in proportion to the sales during the year. However, it gives no inkling as to the causes of the change in the relationship. The structural ratio analysis is, therefore, a most superficial one. However, in some cases this superficial analysis is all that is required, it may indicate that the relationship is so unfavorable, for instance, that no further investigation is necessary.

The structural ratios are significant to the analyst if he has a basis for deciding what the relationship measured should normally be. If he has decided, for example, that in the above case the average collection period should be about 57 days, and the year is assumed to contain 300 business days, the normal ratio is 526 per cent. He will consequently conclude that the position of the receivables on December 31 of the first year was above normal and that on December 31 of the second year it was below normal.

One of five possible variations in sales and receivables may have occurred to cause the decline in the ratio of sales to receivables:

1. A decline in sales and a rise in receivables
2. A rise in both sales and receivables, but the rise in receivables at a higher rate than that in sales
3. A decline in both sales and receivables, but the decline in sales at a higher rate than that in receivables.

- 4 No change in sales but a rise in receivables
- 5 No change in receivables, but a decline in sales

Of these possibilities, 4 and 5 may be ignored, since it is hardly possible that in any business either the sales or receivables would be identical in two successive statements. Therefore, three practical relative variations remain to be taken into consideration.

The two following possibilities in the case may now be considered

SECOND ILLUSTRATION

	<u>Sales</u>	<u>Receivables, December 31</u>	<u>Ratio of Sales to Receivables</u>
First year	\$425,072	\$80,250	531%
Second year	489,868	97,905	500

THIRD ILLUSTRATION

First year	\$425,972	\$80,250	531%
Second year	392,600	78,520	500

Although in each of the three illustrations the sales and receivables behaved differently, the ratios are identical, the relative proportions are similar, but in each of the three illustrations the variations which resulted in these proportions are different.

Knowing that a business is above or below normal with respect to the position of receivables may be of interest, but such knowledge is not sufficient to the analyst who desires to know, as far as possible, what is occurring in a business. If a decline has taken place in the ratio, he wants to ascertain its cause. For this information he must pass on to the trend ratio level of analysis.

Trend Ratio Level of Analysis

The trend ratios in the above three illustrations are as follows

FIRST ILLUSTRATION

	<u>Sales</u>	<u>Receivables</u>
First year	100%	100%
Second year	97	102

SECOND ILLUSTRATION

First year	100%	100%
Second year	115	122

THIRD ILLUSTRATION

First year	100%	100%
Second year	92	98

The ratios show the following information

In the first illustration sales declined and receivables rose

In the second illustration both sales and receivables rose, but the receivables rose at a higher rate than the sales

In the third illustration both sales and receivables declined, but the sales declined at a higher rate than the receivables

The above three illustrations demonstrate the three possible practical causes of a decline in the ratio of sales to receivables

The trends in a business are more clearly seen when several consecutive statements are compared. Let it be assumed that in the third illustration the behavior of sales and receivables for five years was as follows

Year	Sales	Sales Trend Ratio	Receivables Dec 31	Receivables Trend Ratio	Structural Ratio
First year	\$425,972	100%	\$80,250	100%	531%
Second year	392,600	92	78,520	98	500
Third year	355,889	84	72,928	90	488
Fourth year	317,990	75	66,525	83	478
Fifth year	274,978	65	57,890	72	475

The structural ratio of sales to receivables registers a constant decline, an indication that the relationship has become more and more unfavorable. The trend ratios clearly show the reason for the constantly more unfavorable condition. The sales and receivables both declined, but the sales declined at a higher rate than the receivables.

Although the trend ratios show how sales and receivables behaved to cause the structural ratio to decline, they do not give the complete story. The analyst who seeks the underlying causes of business phenomena will want to know why sales and receivables declined as they did. In order to answer such questions, he must pass on to another level of analysis.

Level of Analysis of the Variables

The two variables under consideration are sales and receivables. An analysis of the variation in the item "sales" in the income statement may be made in terms of the amounts due to (1) variation in the commodity volume, and (2) variation in the prices at which the product was sold. The device employed in the meas-

urement of these variables is the statement accounting for variation in gross margin, which was discussed in Chapter 9. This device, however, requires information as to the number of units of commodity sold, when the analyst does not have such information available, he cannot proceed on this level

An analysis of the amount of receivables found in the balance sheet may be made by aging the accounts, that is, determining the amount of receivables not yet due, those 1 to 30 days past due, those 31 to 60 days past due, and so forth. This procedure will reveal to what extent the receivables are past due and may account for any unduly large amount of receivables

When measurement of the variation in sales due to variation in commodity volume and in prices has been effected, however, the root of the problem has not yet been reached. These variations are due to numerous forces, all of which may be accounted for. Similarly, there are many reasons why receivables have behaved as they have, and these causes may be discovered by the diligent analyst. For the analysis of these forces it is necessary to descend to the final level, which is the economic level

Economic Level

On the economic level are examined the fundamental forces underlying a business enterprise, the effects of which are indicated by the structural ratio. If it were possible to measure these forces quantitatively, the analyst would have the key to the entire problem of enterprise analysis. Their quantitative measurement, however, is usually impossible, the discussion of these factors is, therefore, largely in qualitative terms. However, an understanding of what forces are at work is most useful to the analyst in enabling him to account for disproportions or extreme variations.

In passing into this economic realm, one passes from the actual analysis of the financial statements and so beyond the scope of this book. Nevertheless, it is not out of place to indicate here what the underlying forces are that affect the position of a business enterprise, for an understanding of them is essential for a full interpretation. They may be grouped in three categories:

1. General business conditions
2. Conditions in the specific industry in which an enterprise is engaged

3. Conditions peculiar to the particular enterprise under analysis

The study of general business conditions and of the conditions in specific industries constitutes the branch of economics known as business cycles. The problems of individual enterprises in connection with sales come under the head of marketing, those affecting structure are part of the subject of management, and those relating to receivables belong to the part of economics known as credit. The analyst must be familiar with these subjects if he hopes to make an exhaustive analysis.

Forces Affecting Commodity Volume

It is evident that the demand for a certain commodity will be greater when business is booming than when it is in a relatively inactive state. An increase in the number of units sold may be due to general business activity, but sometimes it is caused by unusual activity in a specific industry. To account for variation in commodity volume as affected by these forces is an extremely complicated matter. To explain the forces at work in the individual enterprise is far less difficult.

Variation in commodity demand may be attributed to such factors within an enterprise as the following:

- 1 The quality of the goods or services
- 2 Efficiency and courtesy in supplying the goods or services
- 3 Creation of demand by such factors as advertising and style creation
- 4 The amount of pressure exerted by sales force.
- 5 The possibility of favorable markets
- 6 Strategic location
- 7 Other factors, such as an early start in the industry, quasi-monopoly, and so forth

Forces Affecting Sales Prices

The prices obtained for the goods sold will be affected not only by the general price level and the level of prices in the specific

industry in which an enterprise is engaged, but also by conditions peculiar to the particular enterprise

The prices that an enterprise commands are affected by such factors within the business as the following

- 1 The quality of the goods or services
- 2 Efficiency and courtesy in supplying the goods or services.
- 3 Degree of competition.
- 4 Cost of production
- 5 Labor relations
- 6 Strategic advantages

Forces Affecting Receivables

The causes of variation in the volume of receivables may be placed in two classes

- 1 Those due to the customers' ability to pay
- 2 Those due to factors within the business

The customers' ability to pay is affected by the following

- a. General business conditions
- b. Conditions in specific industries
- c. The peculiar problems of the individual customers

As is the case with sales, the problems of receivables connected with the general business cycle and the specific cycles of various industries are too broad even to be enumerated here. The peculiar problems of individual customers are legion and may range from managerial inefficiency to such matters as fire losses.

The forces within a business under analysis which affect the position of receivables may be found more readily than the external ones. An excessive amount of receivables, or overextended credit, is one of the common weaknesses in the financial structure of business enterprises. Such a condition indicates that the function of collecting the receivables is not operating with sufficient velocity. The factors within an enterprise affecting the volume of receivables which must be studied to diagnose a condition of overextended credit are as follows

- 1 The collection policy
- 2 The terms granted

If the funds which should become available through the collection of receivables are withheld, the business must obtain funds for its operation from other sources. Two means are usually available:

1. Borrowing from banks
2. Passing the burden of financing the enterprise on to its creditors

Both methods are unsatisfactory, for the first increases interest charges, which in turn diminish net income, and the second is conducive to excessive trading on the equity.

Inflated receivables are caused not only by laxity in collection policy but sometimes also by extension of credit on unduly long terms for the purpose of promoting sales. Obtaining sales through stretching credit terms is not indicative of a wholesome condition, and the analyst will look upon such procedure unfavorably.

Structural Ratio Variation the Result of Many Factors

From the foregoing it should be obvious that limiting the work of statement analysis to the computation of structural ratios is a most superficial procedure. It is true that the structural ratios serve a very useful purpose in calling attention to disproportions, and in many instances the analyst may not need to proceed further. If he desires to carry his work as far as possible, however, he cannot be content with knowing that a disproportion exists, for this condition is but a symptom of some ailment. It is his duty to discover the specific ailment and its causes.

It is probable that the investment analyst will deem it necessary to proceed to the lowest level of analysis more frequently than will the credit analyst, for the latter is primarily interested in debt-paying ability, while the interest of the former has no limit.

The many ramifications to which the analysis of the relation of sales to receivables may lead are illustrated in Figure 68. This chart should serve to show to what lengths an analyst may proceed. What has been said here of the relation of sales to receivables applies equally to the other significant relationships.

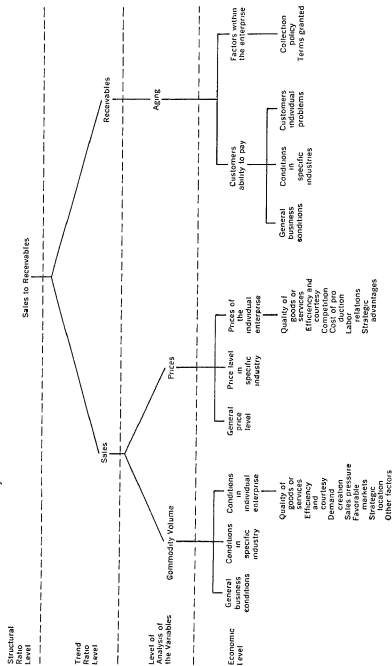


Fig 68 Diagram of levels of analysis of sales and receivables

Interpretation of the Position of Inventory

The inventory presents one of the most difficult of the accountant's problems. In times past, the accountant has assumed little responsibility for the correctness of the inventory, but more recent events have led to the placing of greater responsibility upon him than formerly. Although he cannot be expected to assume the duties of an appraiser, the accountant is now expected to make more tests than he formerly was and to make observations of the inventory taking.

Even under the best conditions, the inventory presents difficulties. Sometimes no definite market quotations are available for all commodities in the inventory as of the last day of a period, so that the person who prices the inventory may have to use a considerable amount of discretion in his work. When one appreciates that in a large inventory a difference in pricing of a fraction of a cent per unit may readily convert a considerable loss into a nice profit, one may well understand the difficulties involved. Manipulation of the stated value of the inventory is one of the easiest methods of "window-dressing" the financial statements.

Inventory Velocity

The measurement of the inventory in relation to sales by means of the ratio of sales to inventory has been discussed. If the ratio is abnormally low, it may indicate a pathological condition which has been called "overinvestment in inventory."

If it is assumed that in a particular case the inventory amounted to \$67,580 on December 31 of a certain year, and the total sales during the year were \$459,350, the ratio of sales to inventory is 680 per cent. If the analyst considers a ratio of, say, 850 per cent as normal in the enterprise under consideration, he may diagnose the case as overinvestment in inventory, that is, the inventory is too large for the amount of business transacted.

The comparison of sales and inventory, however, is not even a reasonably precise measure, because the two items compared are on different bases of valuation, inventory being on a cost (or market) basis and sales being on a cost plus profit basis. It would be more satisfactory to eliminate the gross margin from the

sales figure so that the two items may be compared on the cost basis. In order to do that, the cost of goods sold may be compared with the inventory, or preferably with the average inventory.

Let it be assumed that the cost of the goods sold in the above illustration is \$420,542. If the inventory on January 1 of the year being studied was \$73,650, the average of the initial and final inventories is \$70,615. Dividing the cost of the goods sold by the average inventory gives a ratio of 596 per cent. This ratio indicates a turnover of approximately six times per annum. If the analyst considers the normal ratio to be 750 per cent, or a turnover of $7\frac{1}{2}$ times, he will consider the inventory too large in proportion to the volume of sales.

This measure is, of course, only an approximation. To simplify the calculations, all changes in price level during the year have been disregarded. Also, a tacit assumption is made that the inventory has a fairly constant volume. These assumptions are usually contrary to fact, the price level fluctuates, and few commodities are in constant demand throughout the year, so that the inventory volume will usually not be constant. However, no practical way of introducing these variables into the calculations exists, the analyst will modify his conclusions as he sees fit.

If the analyst does not have available the cost of the goods sold but knows the approximate rate of gross margin, he is able to reduce the sales to cost by eliminating the profit.

Gross Margin Test of Inventory

The analyst may sometimes discover inflation or other discrepancies through a scrutiny of the relation of gross margin to sales—that is, by a horizontal reading of the relation of gross margin to sales over a period of years. Any important variation in the rate of gross margin that cannot be satisfactorily explained by information available as to changes in sales and in the cost of the goods sold may be due to over- or under-statement of the inventory or to errors in taking the inventory.

Commodity Volume of Inventory

The possible causes of variation in sales have been discussed with reference to the ratio of sales to receivables. Variation in inventory is caused by two variables.

- 1 Commodity volume.
- 2 Prices.

The volume of commodities carried in stock will depend upon customers' demands and the management's estimate of future prospects. This estimate may be affected not only by normal expectation of demand but also by the possible gain through purchase at a low price with expectation of exceptional profits in the future, in other words, speculation in inventory may take place.

The analyst is usually not inclined to regard speculation in inventory with favor, for it is a precarious undertaking. Its success is dependent upon a future rise in prices. If this rise does not take place, the speculator may find himself with excessive stock on hand and may be able to sell it only at a loss.

Prices of Inventory

The second variable in the stated amount of inventory is price. This factor is affected by two variables:

- 1 Actual cost prices
- 2 Market prices at date of balance sheet

The actual cost prices are dependent upon the following:

- a. The price level of the commodities at the date of acquisition.
- b. The acquisition policy of the enterprise.

The acquisition policy affects cost because the enterprise may elect whether it will manufacture certain goods or purchase them in fabricated form, and the cost would probably be different in each case. If the enterprise manufactures the commodities, then cost will be subject to the many variables encountered in the field of cost accounting. If it purchases them in fabricated condition, the price paid will vary with the size of the orders placed with the producer or manufacturer.

The market prices at the date of the balance sheet will be subject to all the factors affecting market prices, which are too numerous to be mentioned here.

From the foregoing it is seen that countless forces are at work affecting not only the item "sales" but also the item "inventory."

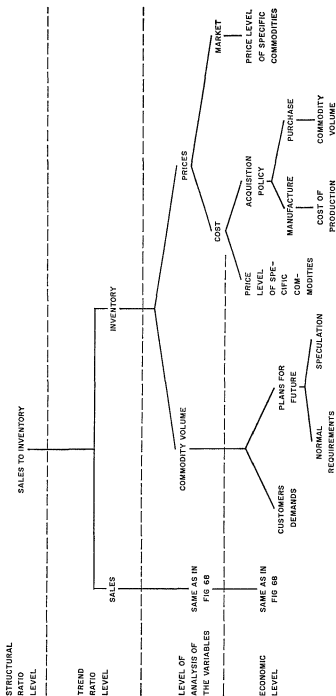


Fig 69 Diagram of levels of analysis of sales and inventory

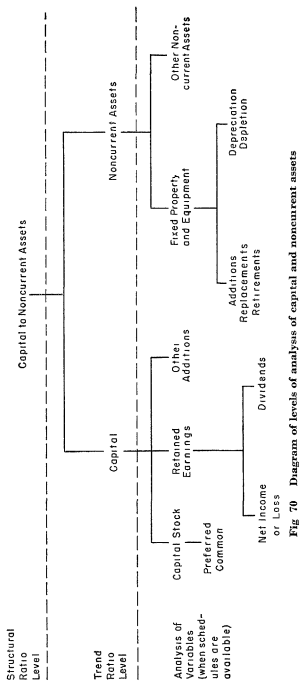


Fig 70 Diagram of levels of analysis of capital and noncurrent assets

A fundamental analysis will endeavor to account for all forces, as far as is feasible. The final answer is to be found, however, on the economic level if it is possible to obtain sufficient data with which to work.

The structural ratio of sales to inventory is the indicator that calls the analyst's attention to a disproportion or extreme variation, it is the incentive to the analysis. Behind that ratio, however, is a world of forces which requires investigation. Figure 69 presents a bird's-eye view of the route to be followed by the analyst in exploring the relation of sales to inventory in an enterprise.

Interpretation of Position of Noncurrent Assets

The position of the noncurrent assets is measured in relation to the capital.

Variations in noncurrent assets revealed by the trend ratios are due to variations in the following:

1. The fixed property and equipment
2. Other noncurrent assets

Variations in the stated amount of fixed property and equipment are due to the following:

- a. Additions, replacements, and retirements.
- b. Depreciation and depletion.

These variations may all be measured quantitatively if schedules supporting the balance sheet are available.

Variations in Capital

Variations in capital are due to changes in the following:

1. Capital
2. Retained earnings (Surplus)
3. Other additions to capital

The variations in retained earnings are caused by the following:

- i. Net income or loss.
- ii. Dividends.

Information regarding net income or loss is available in the income statement, and information regarding dividends and adjustments is found in the retained earnings statement. All of the variations in capital may thus be measured quantitatively.

The various factors involved in an interpretation of the relation of capital and noncurrent assets are outlined in Figure 70.

Dividends

The variations in retained earnings due to the payment of dividends is of particular interest to the investment analyst. He will want to study the dividend record from two angles:

1. Sufficiency of the dividends and maintenance of a relatively constant rate.
2. Conservatism in retaining a sufficient portion of the earnings within the enterprise.

A fine balance between these two forces is one of the earmarks of a good investment.

Interpretation of the Position of the Equities

The importance of satisfactory proportions between the owners' and creditors' equities, as measured by the ratio of capital to liabilities, has already been discussed at considerable length. The interpretation of this ratio is within the quantitative realm, consequently, the analyst is able to make satisfactory measurements and to interpret them with relatively greater precision than some of the other relationships. What he seeks to learn is whether or not the investment of the owners is adequate.

The causes of variation in capital have been examined in connection with its relation to noncurrent assets. The rather simple causes of variation in liabilities will now be examined. It is worthy of note that the liabilities are among the few balance-sheet items that are stated with fair precision. The amounts assigned to the notes and accounts payable are usually the amounts the business will have to pay, with the exception of the amount of cash discounts which it may deduct from accounts payable. Therefore, little need for qualitative speculation exists.

A variation in liabilities is caused by variation in its two divisions

- 1 Current liabilities
- 2 Long-term liabilities

The former consists of such items as notes payable, accounts payable, and accrued expenses, while the latter consists of such long-term liabilities as mortgages and bond issues. A scrutiny of these items in the comparative statements will supply the analyst

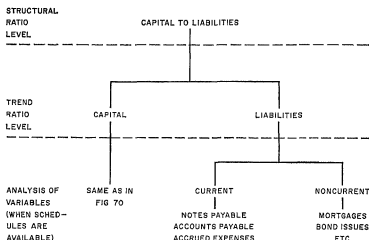


Fig. 71 Diagram of levels of analysis of capital and liabilities

with a full explanation of any variations. Figure 71 outlines the causes of variation in capital and liabilities.

Interpretation of Net Income

The net income is undoubtedly one of the most important items in the financial statements. The object of a business enterprise is to earn income, and a business can be regarded as successful only when its income is adequate. The importance of earnings cannot therefore be overestimated. In fact, as long as adequate income is earned, the existence of the various types of ailments that have been examined is not serious. Such a situation is, how-

ever, unlikely, because the income would hardly be earned if the ailments existed, although occasionally one finds a business making money in spite of certain disproportions. The interpretation of variation in income has been discussed at length in Chapter 9, therefore further discussion is unnecessary here.

Illustrative Cases

Case No. 1

JAMES T. BLISS Comparative Balance Sheet December 31

	<u>1960</u>	<u>1959</u>	<u>1958</u>
<i>Assets</i>			
Cash	\$ 8,257	\$ 20,658	\$ 12,170
Accounts receivable (less bad debts estimate)	42,370	27,763	26,352
Merchandise inventory	36,324	65,359	52,721
Prepaid expenses	725	1,469	862
Total current assets	<u>\$ 87,676</u>	<u>\$115,249</u>	<u>\$ 92,105</u>
Fixed assets (less depreciation)	\$ 4,825	\$ 5,137	\$ 5,285
Miscellaneous receivables	—	2,075	5,204
Total noncurrent assets	<u>\$ 4,825</u>	<u>\$ 7,212</u>	<u>\$ 10,489</u>
	<u><u>\$ 92,501</u></u>	<u><u>\$122,461</u></u>	<u><u>\$102,594</u></u>
<i>Liabilities and Capital</i>			
Notes payable (bank)	\$ 7,500	\$ 10,000	\$ 15,000
Notes payable (other)	4,650	2,285	—
Accounts payable	31,223	52,648	29,273
Accrued expenses	2,484	1,593	1,367
Total liabilities	<u>\$ 45,857</u>	<u>\$ 66,526</u>	<u>\$ 45,640</u>
James T. Bliss, Capital	46,644	55,935	56,954
	<u><u>\$ 92,501</u></u>	<u><u>\$122,461</u></u>	<u><u>\$102,594</u></u>

Comparative Income Statement For Years Ended December 31

	<u>1960</u>	<u>1959</u>	<u>1958</u>
Sales (less discounts, returns and allowances)	\$193,625	\$225,489	\$217,351
Cost of goods sold	<u>126,831</u>	<u>146,258</u>	<u>130,249</u>
Gross margin	\$ 66,794	\$ 79,231	\$ 87,105
Expenses (less other income)	<u>57,505</u>	<u>80,252</u>	<u>86,252</u>
Net income for the year	<u><u>\$ 9,289</u></u>	<u><u>\$ 1,021*</u></u>	<u><u>\$ 853</u></u>

* Loss

This enterprise is a wholesaler of chinaware, glassware, gift ware, lamps, and novelties. Sales are made to department stores, gift shops, and jobbers throughout the United States on terms 1/10, net/30.

Trend Ratios
December 31 or Year Ended December 31

	<u>1958</u>	<u>1959</u>	<u>1960</u>
Current assets	100%	125%	95%
Current (total) liabilities	100	146	101
Receivables	100	105	161
Inventory	100	124	69
Sales	100	104	89
Cost of goods sold	100	112	98
Expenses	100	93	66
Net income	100	—	1087
Capital	100	98	82
Noncurrent assets	100	69	46

Structural Ratios, December 31, 1960

Current ratio	191%
Acid test	110
Capital to liabilities	100
Capital to noncurrent assets	971
Net income to capital	20
Days' sales in receivables	App 66 days
Inventory turnover	App 2.5 times

Comparative Common-Size Income Statement
For Years Ended December 31

	<u>1960</u>	<u>1959</u>	<u>1958</u>
Sales	100.0%	100.0%	100.0%
Cost of goods sold	65.5	64.9	60.0
Gross margin	34.5%	35.1%	40.0%
Expenses	29.9	35.6	39.6
Net income for the year	<u>4.6%</u>	<u>5.0%</u> [†]	<u>4%</u>

[†] Loss

From the trend ratios of current assets and current liabilities, it is seen that the current position has in general become less favorable since December 31, 1958. The current ratio of 191 per cent at December 31, 1960, is rather weak, however, this weakness is offset by the acid test of 110 per cent, which is above the tentative minimum of 100 per cent.

The trend ratio of receivables, compared with that of sales, calls attention to an unusual trend, since sales during the year

ended December 31, 1960 fell to 89 per cent, while receivables rose to 161 per cent. This unusual trend is further accentuated by the fact that the receivables represent approximately 66 days' sales while the terms are 30 days.

The trend of the inventory in relation to that of sales appears satisfactory. The sales have declined—and so has the inventory, and at a higher rate. Whether or not the amount of stock carried is adequate for maintenance of sales efficiency cannot be determined from the statements. The turnover of about 2.5 times is probably low.

While capital declined because of a loss in 1959 and apparently because of withdrawals by the owner in 1960, liabilities rose. At December 31, 1960, the ratio of the equity of the owner to that of the creditors is not above the tentative minimum of 100 per cent, but, since the fixed asset investment is small, this condition is not necessarily to be regarded as unsatisfactory, for in such cases the ratio is normally lower than in cases of enterprises with large fixed investments.

Since the investment in noncurrent assets is small, this item offers no problem. The enterprise obviously rents the premises occupied, and the only fixed assets are furniture and fixtures.

It is a favorable indication that the miscellaneous receivables have been collected.

Operations during the year ended December 31, 1960 have shown considerable improvement. Although sales declined, net income amounting to 4.6 per cent of sales was earned, compared with a loss of .5 of 1 per cent during the preceding year. Analysis of the comparative income statement shows that, although there was a constant decline in the rate of gross margin during the three years, expenses were steadily reduced, drastically enough during the last year to produce a net income.

The 1960 earnings represent a return of 20 per cent on capital, this high rate is due to the fact that the capital is now rather small. It might be questioned whether the capital is adequate.

Apparently the only serious disproportion exists in the receivables. An investigation into the state of the receivables might bring forth any one of several different factual explanations.

1. It might be found that this company has been careless in the extension of credit and has not pursued a sufficiently vigorous

collection policy, so that many accounts are long past due. This explanation would indicate a most unfavorable condition.

2. It might be found, for example, that during the last month of the fiscal year business was unusually active. The large amount of receivables is due to this unusual spurt in business, the accounts are, therefore, not yet due. This explanation would indicate a favorable condition.

The above discussion of the position of the receivables illustrates what has been previously stated: that, although a ratio may point to an unusual, and possibly unfavorable, trend or proportion, the ratio by itself does not necessarily indicate whether the situation is favorable or unfavorable. In order to determine that, it is necessary to obtain factual information, in the absence of such factual information, the analyst cannot arrive at a definite conclusion. In this case the factual information regarding the accounts receivable would be obtained by aging them.

Case No. 2

EDWARDS-JONES CO., INC. Comparative Balance Sheet December 31

	1960	1959	1958
<i>Assets</i>			
Cash	\$ 24,045	\$ 12,387	\$ 5,241
Accounts receivable (less bad debts estimate)	130,837	135,641	127,482
Inventories			
Raw materials	36,804	16,859	17,241
Goods in process	12,348	8,397	7,856
Finished goods	69,831	36,084	35,628
Total current assets	<u>\$273,865</u>	<u>\$209,368</u>	<u>\$193,448</u>
Fixed assets (less depreciation)	\$ 31,760	\$ 29,340	\$ 28,499
Cash surrender value of life insurance policy	7,050	5,800	4,237
Deferred charges	5,628	6,022	3,156
Total noncurrent assets	<u>\$ 44,438</u>	<u>\$ 41,162</u>	<u>\$ 35,892</u>
	<u><u>\$318,303</u></u>	<u><u>\$250,530</u></u>	<u><u>\$229,340</u></u>
<i>Liabilities, Capital Stock, and Retained Earnings</i>			
Accounts payable	\$ 57,214	\$ 22,622	\$ 54,034
Accrued expenses	3,850	8,363	6,246
Federal income tax payable	47,618	42,957	36,303
Total current liabilities	<u>\$108,682</u>	<u>\$ 73,942</u>	<u>\$ 96,583</u>
Capital stock (par \$100)	\$155,000	\$130,000	\$100,000
Retained earnings	54,621	46,588	32,757
Total capital	<u>\$209,621</u>	<u>\$176,588</u>	<u>\$132,757</u>
	<u><u>\$318,303</u></u>	<u><u>\$250,530</u></u>	<u><u>\$229,340</u></u>

**Comparative Income Statement
For Years Ended December 31**

	1960	1959	1958
Sales (less returns and allowances)	\$1,026,324	\$1,362,729	\$902,055
Cost of goods sold	<u>503,929</u>	<u>708,683</u>	<u>505,683</u>
Gross margin	\$ 522,395	\$ 654,046	\$396,372
Expenses (less other income)	<u>420,234</u>	<u>560,858</u>	<u>315,983</u>
Net income before federal income tax	\$ 102,151	\$ 93,188	\$ 80,389
Federal income tax	<u>47,618</u>	<u>42,957</u>	<u>36,303</u>
Net income for the year	\$ 54,533	\$ 50,231	\$ 44,086
Dividends	<u>\$ 46,500</u>	<u>\$ 36,400</u>	<u>\$ 35,000</u>

This company manufactures women's undergarments. It sells to department stores and specialty shops throughout the United States. Terms are 10 E O M

**Trend Ratios
December 31 or Year Ended December 31**

	1958	1959	1960
Current assets	100%	108%	142%
Current (total) liabilities	100	76	113
Receivables	100	107	103
Inventory of finished goods	100	101	196
Sales	100	151	114
Cost of goods sold	100	140	100
Expenses	100	178	133
Expenses (including federal income tax)	100	171	133
Net income	100	114	123
Capital	100	133	158
Noncurrent assets	100	115	124

Structural Ratios, December 31, 1960

Current ratio	251%
Acid test	142
Capital to liabilities	192
Capital to noncurrent assets	477
Net income to capital	25.7
Days' sales in receivables	App 38 days
Inventory turnover (finished goods)	App 8.3 times

**Comparative Common-Size Income Statement
For Years Ended December 31**

	1960	1959	1958
Sales	100.0%	100.0%	100.0%
Cost of goods sold	<u>49.1</u>	<u>52.0</u>	<u>56.1</u>
Gross margin	50.9%	48.0%	43.9%
Expenses (less other income)	<u>40.9%</u>	<u>11.2%</u>	<u>35.0%</u>
Federal income tax	4.7	2.9	4.0
Total deductions from gross margin	45.6%	44.7%	39.0%
Net income for the year	<u>5.3%</u>	<u>3.9%</u>	<u>4.9%</u>

The trend ratios of current assets and current liabilities indicate a constantly improving current position since December 31, 1958. The current ratio at December 31, 1960 of 251 per cent shows a generally satisfactory position (as far as can be determined by the use of this ratio). This opinion is strengthened by the acid test, which registers a ratio of 142 per cent, well above the tentative minimum of 100 per cent.

The trend of receivables as compared with that of sales is satisfactory, since the trend of sales is well above that of the receivables. The days' sales in receivables is reasonable in the light of the terms granted.

The sharp upward trend in the inventory of finished goods at December 31, 1960 to 196 per cent, compared with that of sales, which declined sharply to 114 per cent, calls attention to a possible disproportion, although the turnover of approximately 8.3 appears fairly high.

Because of additional investment and retention of earnings, there is a favorable upward trend of capital. This favorable indication is enhanced by a comparison with the trend of the liabilities. The ratio of capital to liabilities (192 per cent) is quite satisfactory, according to tentative standards.

The upward trend of noncurrent assets, at a lower rate than the capital, is favorable, and the ratio of capital to noncurrent assets (477 per cent) makes an entirely satisfactory showing.

Operations show constant improvement. Although a steady decrease has taken place in the rate of cost of goods sold to sales, this has been offset to a certain extent by a steady increase in the ratio of expenses to sales. The net income for 1960 was 5.3 per cent of sales, while on capital it was 25.7 per cent. The company has been paying large dividends, the latest rate being 30 per cent.

The analysis has directed attention to a possible disproportion in the inventory of finished goods. Investigation might reveal one of various situations such as the following:

1. During 1960 the company anticipated an increased demand for its products because of larger income to individuals as a result of increased business activity, and, since it was able to purchase materials at low prices, it increased production. However, its expectations were not realized, and it now has a large inventory in danger of deterioration and obsolescence. These facts would indicate an unsatisfactory condition.

2. During the latter part of November the company received unusually large orders for delivery in January. The inventory represents goods to be delivered shortly after the balance sheet date, and so the condition is most satisfactory.

The above discussion of the inventory position illustrates that, as in the preceding case, a ratio does not necessarily indicate a good or bad condition, it merely calls attention to an unusual situation which must be interpreted in the light of factual information.

Case No. 3

WOLF & GOODMAN Comparative Balance Sheet December 31

	1960	1959	1958
<i>Assets</i>			
Cash	\$ 5,654	\$ 6,257	\$ 8,940
Accounts receivable (less bad debts estimate)	5,892	5,513	4,673
Merchandise inventory	34,762	41,082	31,123
Total current assets	<u>\$ 46,308</u>	<u>\$ 52,852</u>	<u>\$ 44,736</u>
Fixed assets (less depreciation)	\$ 97,629	\$ 93,074	\$ 87,321
Miscellaneous receivables	3,985	4,250	5,816
Prepaid expenses	846	521	688
Total noncurrent assets	<u>\$102,460</u>	<u>\$ 97,845</u>	<u>\$ 93,825</u>
	<u><u>\$148,768</u></u>	<u><u>\$150,697</u></u>	<u><u>\$138,561</u></u>
<i>Liabilities and Capital</i>			
Accounts payable	\$ 24,251	\$ 29,449	\$ 17,322
Accrued expenses	1,853	2,467	1,524
Loans payable	5,000	—	—
Deposits	1,500	1,500	—
Total current liabilities	<u>\$ 32,604</u>	<u>\$ 33,416</u>	<u>\$ 18,846</u>
Mortgages	\$ 30,000	\$ 35,000	\$ 40,000
Loans payable	15,000	20,000	20,000
Total noncurrent liabilities	<u>\$ 45,000</u>	<u>\$ 55,000</u>	<u>\$ 60,000</u>
Total liabilities	<u>\$ 77,604</u>	<u>\$ 88,416</u>	<u>\$ 78,846</u>
Capital	71,164	62,281	59,715
	<u><u>\$148,768</u></u>	<u><u>\$150,697</u></u>	<u><u>\$138,561</u></u>

Comparative Income Statement For Years Ended December 31

	1960	1959	1958
Sales (less returns and allowances)	\$204,657	\$212,962	\$176,240
Cost of goods sold	134,309	141,285	119,684
Gross margin	<u>\$ 70,348</u>	<u>\$ 71,677</u>	<u>\$ 56,556</u>
Expenses (less other income)	60,003	56,054	51,269
Net income for the year	<u><u>\$ 10,345</u></u>	<u><u>\$ 15,623</u></u>	<u><u>\$ 5,287</u></u>

This enterprise retails dry goods and wearing apparel. Approximately 90 per cent of sales are made for cash, those on open account are made on a 30-day basis.

Trend Ratios
December 31 or Year Ended December 31

	<u>1958</u>	<u>1959</u>	<u>1960</u>
Current assets	100%	118%	104%
Current liabilities	100	178	173
Receivables		Not significant	
Inventory	100	132	112
Sales	100	121	116
Cost of goods sold	100	118	112
Expenses	100	109	117
Net income	100	295	196
Capital	100	104	119
Total liabilities	100	112	98
Noncurrent assets	100	104	109

Structural Ratios, December 31, 1960

Current ratio	142%
Acid test	35
Capital to liabilities	92
Capital to noncurrent assets	70
Net income to capital	15
Days' sales in receivables	Not applicable
Inventory turnover	App 3.5 times

Comparative Common-Size Income Statement
For Years Ended December 31

	<u>1960</u>	<u>1959</u>	<u>1958</u>
Sales	100.0%	100.0%	100.0%
Cost of goods sold	65.4	66.2	68.2
Gross margin	34.6%	33.8%	31.8%
Expenses	29.3	26.3	29.0
Net income for the year	<u>5.3%</u>	<u>7.5%</u>	<u>2.8%</u>

The trends of the current assets and current liabilities indicate that the current position over the two-year period has become steadily less satisfactory. The current ratio of 142 per cent at December 31, 1960, is poor according to accepted standards, but, since this enterprise sells largely for cash, it would normally have a lower current ratio than a firm selling on credit. However, the acid test result of 35 per cent may be regarded as definitely unsatisfactory.

The behavior of the inventory has been in accord with the

trend of sales. The turnover of approximately 3.5 times is probably low.

The upward trend of the capital, due to accumulated earnings, is a favorable indication. This trend compared with that of total liabilities produces a similar favorable reaction. However, the ratio of capital to liabilities at December 31, 1960 (92 per cent) indicates rather heavy indebtedness.

The ratio of capital to noncurrent assets of 70 per cent has an unfavorable tendency, since it indicates that the creditors have a 30 per cent equity in the noncurrent assets.

Operations are definitely profitable, although they were not as profitable in 1960 as in 1959. There was a constant rise in the rate of gross margin on sales because of a decline in the rate of cost of goods sold. This was accompanied in 1959 by a decline in the rate of expenses, thus yielding a rise in the rate of net income on sales from 2.8 per cent in 1958 to 7.5 per cent in 1959. However, a rise in the rate of expenses to sales in 1960 reduced the rate of net income on sales to 5.3 per cent.

The analysis has directed attention to two matters that require factual investigation: (1) the proportion of the equities of owners and creditors, (2) the rise in expenses which reduced the 1960 net income.

1. It is obvious that an additional investment of cash in the business would correct the various disproportions. An investment, for example, of \$25,000 would raise the current ratio to 219 per cent, the ratio of capital to liabilities to 125 per cent, and the ratio of capital to noncurrent assets to 94 per cent. Since the operations have been profitable, it is not unlikely, other things being equal, that such investment might be obtained.

2. (a) Upon investigation it might be found that the increase in expenses was due largely to the rental of additional space and to the hiring of additional employees because an increased volume of business was expected. Since the increase was not realized, the situation would be considered unsatisfactory.

(b) It might be found that the increase in expenses was due to a special advertising campaign which was highly successful, since it definitely stimulated business. If this campaign had not been undertaken, the sales would have been much lower than they were. From this explanation it would be concluded that the management's policy had been satisfactory.

Here, again, it is demonstrated that ratios are not conclusive and act merely as signals which attract attention to something which must be determined or verified by factual investigation

Case No. 4

R P GILLESPIE
Comparative Balance Sheet
June 30

	1960	1959	1958
<i>Assets</i>			
Cash	\$ 3,562	\$ 4,265	\$ 3,418
Accounts receivable (less bad debts estimate)	86,298	85,460	72,680
Merchandise inventory	88,340	95,629	69,397
Prepaid expenses	2,745	3,852	2,846
Total current assets	<u>\$180,945</u>	<u>\$189,206</u>	<u>\$148,341</u>
Building (less depreciation)	\$148,268	\$150,220	\$153,039
Furniture and equipment (less depreciation)	8,405	7,352	7,287
Miscellaneous receivables	1,760	2,500	1,250
Total noncurrent assets	<u>\$158,423</u>	<u>\$160,072</u>	<u>\$161,576</u>
	<u>\$339,368</u>	<u>\$349,278</u>	<u>\$309,917</u>
<i>Liabilities and Capital</i>			
Notes payable (bank)	\$ 10,000	\$ 20,000	\$ —
Accounts payable	74,857	87,682	51,764
Accrued expenses	6,854	7,245	6,489
Total current liabilities	<u>\$ 91,711</u>	<u>\$114,927</u>	<u>\$ 58,253</u>
Mortgage on building	50,000	50,000	50,000
Total liabilities	<u>\$141,711</u>	<u>\$164,927</u>	<u>\$108,253</u>
R P Gillespie, Capital	197,657	184,351	201,664
	<u>\$339,368</u>	<u>\$349,278</u>	<u>\$309,917</u>

Comparative Income Statement
For Years Ended June 30

	1960	1959	1958
Sales (less discounts, returns, and allowances)	\$775,196	\$732,685	\$621,537
Cost of goods sold	420,847	380,479	297,468
Gross margin	<u>\$354,349</u>	<u>\$352,206</u>	<u>\$324,069</u>
Expenses (less other income)	341,043	359,519	259,212
Net income for the year	<u>\$ 13,306</u>	<u>\$ 7,313*</u>	<u>\$ 64,857</u>

* Loss

Mr R P Gillespie is a jobber of dry goods Terms of sale are 1/10, net/30

Trend Ratios
June 30 or Year Ended June 30

	1958	1959	1960
Current assets	100%	128%	122%
Current liabilities	100	198	157
Receivables	100	118	119
Inventory	100	138	127
Sales	100	118	124
Cost of goods sold	100	128	142
Expenses	100	139	132
Net income	100	—	20
Capital	100	91	98
Total liabilities	100	153	131
Noncurrent assets	100	99	99

Structural Ratios, June 30, 1960

Current ratio	197%
Acid test	98
Capital to liabilities	139
Capital to noncurrent assets	125
Net income to capital	6.5
Days' sales in receivables	App 30 days
Inventory turnover	App 4.6 times

Comparative Common-Size Income Statement
For Years Ended June 30

	1960	1959	1958
Sales	100.0%	100.0%	100.0%
Cost of goods sold	51.3	51.8	47.7
Gross margin	48.7%	48.2%	52.3%
Expenses	44.0	49.1	41.6
Net income for the year	1.7%	9%*	10.7%

* Loss

Current position was less favorable at June 30, 1959 than it was a year before because of the sharp rise of current liabilities to 198 per cent while current assets rose to 128 per cent. However, the trend was more favorable at June 30, 1960 because current liabilities dropped to 157 per cent while current assets dropped to 122 per cent. The current ratio of 197 per cent at June 30, 1960 is close to the tentative minimum, as is also the acid test, which is at 98 per cent.

The trend of receivables in relation to sales is satisfactory, the days' sales in receivables, approximately 30, is reasonable in the light of the terms of sale.

The inventory at June 30, 1959 was somewhat out of line

with sales but at June 30, 1960 appears reasonable. The turnover of 4.6 times may be somewhat slow.

Although sales have steadily increased so that for the year ended June 30, 1960 they stood at 124 per cent of the sales for the year ended June 30, 1958, the cost of goods sold rose at a considerably higher rate, standing for the year ended June 30, 1960 at 142 per cent of the cost for the year ended June 30, 1958. The cost of goods sold amounted during the year ended June 30, 1960 to 54.3 cents per dollar of sales, whereas for the year ended June 30, 1958 it was 47.7 cents, and for the year ended June 30, 1959, 51.8 cents.

The trend of expenses for the year ended June 30, 1959 was upward to 139 per cent of the previous year but declined during the year ended June 30, 1960 to 132 per cent. The expenses during the year ended June 30, 1960 were 44 cents per dollar of sales, whereas they were 49.1 cents per dollar of sales the previous year.

Net income for the year ended June 30, 1960 was at the rate of 6.5 per cent on capital and 1.7 per cent on sales. This was a great improvement over the previous year, in which a loss was sustained.

The proportions of capital to liabilities and to noncurrent assets appear satisfactory.

An investigation should be made with respect to the cause of the rise in the cost of goods sold in relation to sales. This investigation might reveal one or more reasons for the rise. Such factors as efficiency in making purchases and ability to adjust selling prices to market conditions are involved. The management succeeded in reducing expenses during the year ended June 30, 1960, it should now seek ways and means of reducing costs or increasing revenues, or perhaps both.

Academic Analysis *versus* Analysis in Business

The foregoing illustrative cases have been analyzed and interpreted in the manner expected of the student. In each case, the computations have been made in accordance with the basic analytical technique, consisting of trend ratios, structural ratios, and a comparative common-size income statement. These were followed by an interpretation of the measurements, leading to an indication of the matters to be investigated. Examples were

then given of facts that might be discovered upon making the investigation.

The analyst in business will not necessarily make all the computations here outlined. In fact, he may in the course of time develop a sense of direction and proportion to such an extent that he will be able to recognize unusual trends and proportions without making any formal computations. Also, he will usually be able to obtain the factual information not available to the student and so can carry the interpretation to a conclusion.

Attention is again directed to the fact that, since the financial statements show, not the financial condition of a business, but rather the position of the accounting for that business, the conclusion with respect to the condition of a business cannot be found in the statements themselves. However, since all financial events in a business are finally reflected in the statements, by use of the analytical devices presented in previous chapters, unusual trends and proportions are revealed. Having obtained significant clues, the analyst will make the necessary investigation to obtain the facts. He will formulate conclusions only after obtaining the facts.

Standard Ratios

The interpretation of the vertical ratios—that is, the structural and the operating, or income statement, percentages—may be made by the analyst on the basis of standards formed through his personal experience, but he may also use the results of such studies as have been made by competent research workers with a view to determining standards in the financial structure and operations of business enterprises. It is the purpose of this chapter to discuss the feasibility of developing standards by research.

Average Ratios as Standards

Standard ratios should represent normal relationships among items in the financial statements of a business and would be indicative of a satisfactory condition.

When analysis of financial statements by ratios became generally accepted as the approved method of studying the position of a business, writers on this subject began to feel the necessity of having standards by which to judge the ratios computed from individual statements. The method suggested for developing such standards was to obtain as many statements as possible of enterprises in each industry, compute various ratios of the items in these statements, and take averages of the ratios. These averages were supposedly norms for the proportions in the financial statements of the enterprises in the industries under consideration.

That an average of the ratios of statements of enterprises in an industry will be a norm or standard has never been conclusively demonstrated. Most organizations that have published these alleged standard ratios have merely tabulated the results

of their findings without revealing the data on which they are based. These data have not been available for publication, it is intimated, because they have been given in confidence. As a result, readers are expected to accept the standard ratios on faith.

Since the financial statements are combinations of facts, conventions, postulates, and personal judgments, the ratios derived from them cannot be precise factual measures, and any average of these ratios is an average of a multiplicity of different combinations of facts, conventions, postulates, and personal judgments of many accountants. This fact detracts from the value of such averages for measuring purposes. Furthermore, at times many of the members of certain industries are without doubt in unsatisfactory financial condition. Averages of the ratios found in the statements of enterprises in such industries would certainly not be ideals to be emulated.

Even proponents of standard ratios have conceded that average ratios, instead of being ideals, merely show what proportions are representative in an industry, but they feel that these ratios enable the individual enterprise to see what its own ratios should approximate in order to be equal to the average in its industry. This more limited statement of the attributes of average ratios is quite acceptable if it can be established that the averages are representative.

Statement of the Problem

The problem of standard, or normal, or average ratios in financial structure and operations involves all the problems in connection with these ratios that have been discussed in this volume and several additional ones. Consequently, the matter which is usually glibly stated as "compute an average of the ratios in an industry" is not as simple as it would seem to anyone who has not given it due consideration.

Aside from the usual difficulties in ratio analysis, the problem divides itself into three parts:

1. Homogeneous grouping of the enterprises.
2. Uniformity of the data.
3. Reliability of the averages.

These matters will now be considered.

Homogeneous Grouping of the Enterprises

It is a necessary prerequisite in standard ratio computation that the enterprises included in an average must be in the same kind of business, that is, they must form a homogeneous group. Although much has been written about standard ratios, no definition of what constitutes an industry or kind of business is usually given.

Probably the best classification of business enterprises is to be found in the various United States censuses. The *Census of Manufactures 1954* classifies the establishments covered into approximately 450 industries, each of which should undoubtedly be given separate consideration by standard ratio compilers. However, this is not sufficient, since each of these industries has many subdivisions, most of which would require individual treatment. For example, textile mill products has 32 subdivisions, pulp, paper, and products, 12, printing and publishing industries, 16, chemicals and products, 41, leather and leather products, 12, and electrical machinery, 21.

Groups Within the Subdivisions

Consideration should also be given to the fact that a set of average ratios for an industrial subdivision is still not sufficient because of differences within each subdivision of an industry. Such differences exist with respect to

- Type of product
- Type of operation
- Location.
- Size
- Chentele.

Type of Product

The products of different enterprises in an industry may be of different types or classes, and the difference in product may materially affect various factors in the financial structure of the companies which manufacture them. Although both are auto-

mobiles, a Ford is quite a different product from a Cadillac. Similarly, the newsprint and kraft paper and board produced by the International Paper Co. are very different from the fine writing paper of the American Writing Paper Co. In many respects, the structure of the International Paper Co. has more similarity to that of the Ford Motor Co., owing to its integration of activities.

Type of Operation

Most subdivisions of businesses can readily be further subdivided into groups according to type of operation. For example, the *Census of Business 1954, Wholesale Trade* classifies wholesale establishments into 5 major type-of-operation groups having 20 subclasses, as outlined below.

- A Merchant wholesalers
 - 1 Wholesale merchants, distributors
 - 2 Terminal grain elevators
 - 3 Importers
 - 4 Exporters
 - 5 Cash-carry wholesalers
 - 6 Wagon, truck distributors
 - 7 Other limited-function wholesalers
- B Manufacturers' sales branches, sales offices
 - 1 Sales branches (with stocks)
 - 2 Sales offices (without stocks)
- C Petroleum (including LP gas) bulk plants, terminals
 - 1 Refiner-market bulk plants, terminals
 - 2 Other bulk plants, terminals
 - 3 Wholesale LP gas facilities
- D Merchandise agents, brokers
 - 1 Auction companies
 - 2 Brokers (merchandise)
 - 3 Commission merchants
 - 4 Export agents
 - 5 Import agents
 - 6 Manufacturers' agents
 - 7 Selling agents
 - 8 Purchasing agents, resident buyers
- E Assemblers of farm products

These are further subdivided into different kinds of business. For example, merchant wholesalers are classified into some 160

kinds of business. Thus, for merchant wholesalers alone, there might be required 1,120 (7×160) different sets of ratios!

Location

It has been contended that the location of an enterprise will affect the structural relationships in its financial statements and that industries should therefore be subdivided according to the location of their members. Although this grouping seems plausible, the effect of location on the ratios has never been satisfactorily demonstrated. It seems reasonable to expect that, if location does affect structure, its effect will be more apparent in the income statement than in the balance sheet, for it may influence various costs of operation.

Size

It has been held that the size of a business affects the relationships in its financial structure. Although size may have some effect in certain instances, this effect, like that of location, has never been conclusively demonstrated, rather, it has often been merely taken for granted. Two bases have been used in grouping enterprises according to size: (1) the stated value of assets and (2) the sales volume.

Although a different average ratio may be obtained for different location or size groups, it does not necessarily follow that either location or size has been the cause of the variation, since the many influences mentioned in this chapter which affect the ratios exist in all cases. It is the complexity of the problem, its great number of variables, as in the case of most economic problems, that makes its solution difficult.

Clientele

The type of customers with whom an enterprise does business may affect its ratios, particularly those involving receivables. A store which caters to wealthy customers must be in a position to extend credit much more liberally than need others. Enterprises selling largely to farmers must be prepared to wait for payment until crops have been harvested. Those who sell to groups in the

community that do not take their financial obligations very seriously must anticipate considerable losses from bad debts and arrange prices in accordance with the degree of risk taken. Also, the type of clientele will affect the location, the equipment, and the cost of operation, since the taste of the clients must be catered to. These considerations will influence the financial statements in such a way as to invalidate comparisons of enterprises having great differences in clientele.

Uniformity of the Data

Averages of ratios computed from statements which have not been produced by similar accounting methods will be entirely without significance. Two requirements for uniformity in statements used in averaging have usually been overlooked by writers on standard ratios. They are as follows:

1. Uniform accounting procedures.
2. Uniform accounting periods.

Uniform Accounting Systems

If the enterprises in an industry use different, though acceptable accounting procedures, their statements will not be comparable. In Chapter 2 a number of differences in procedure were discussed. Even in successive statements of certain companies, one finds differences, a situation which has led to the requirement of the Securities and Exchange Commission and the American Institute of Certified Public Accountants that accountants state in their reports whether or not the accounting methods used in preparing the statements have been consistently maintained, and, if not, what changes have been made.

Before reliable standards can be developed by averaging statements, it is essential that all the statements included in an average be prepared according to a uniform procedure.

Uniform Accounting Periods

Another requirement for standard ratios is that all enterprises whose ratios are included in an average close their books as of the same date. Certain of the items in the statements, particularly

the inventory, are affected by the price level on the date of closing. Accordingly, statements prepared as of different closing dates do not have the same basis in this respect. Then, too, because the inventory volume will usually vary at different times of the year, the statements will not be comparable unless they are compiled as of the same date. It is therefore evident that, unless a uniform closing date is used throughout an industry, the statements of its members cannot be used for the purpose of computing standards.

A movement is under way for the establishment of a uniform closing date in each industry on the basis of what has been called the "natural business year." The Natural Business Year Council, which is sponsoring this movement, believes that each industry should close its books on the date selected as the most logical one for the industry. To cite a few examples: October 31 has been selected for automobile dealers because new models are introduced in November, on October 31 the books would show the complete results of an entire trading year. General book publishers would find January 31 most satisfactory, for on that date, after the holiday season peak, inventories are low until the smaller peak in April. For wholesale groceries June 30 is a suitable closing date, because in this business an expansion takes place in September with a peak in November and a drop after Christmas, and a secondary peak in May followed by a low in inventories. In like manner, a date on which the books might most logically be closed can be found for each industry.

Reliability of the Averages

The third problem in connection with the averaging of ratios is that of securing reliable or representative averages. The average of a series of values is a single typical figure which is thoroughly representative of the series. In order that this average may be representative, the values must tend to concentrate about it. If the individual items vary greatly in magnitude and do not show this tendency toward concentration, they cannot be represented by a single value. For example, the arithmetic mean of the three numbers 28, 188, and 1050 is 422, but this number is not representative of the group and is not an acceptable average.

In order that average ratios may be computed, it is, therefore, a fundamental requirement that the various ratios of enterprises

within a given industry show a concentration about central values. It is doubtful, however, whether such concentration can commonly be found, as will be seen from the illustrations which follow.

Averages of Ratios in Industries

In order to provide samples of what may be expected in the matter of obtaining representative ratios in industries, four industries have been selected: (1) cotton textiles, (2) Portland cement, (3) hosiery, and (4) brewing. From each of the balance sheets of 33 cotton textile companies, 16 Portland cement companies, 14 hosiery companies, and 35 brewing companies, as of various dates in 1959, the current ratio—the most widely accepted ratio—has been computed. In Figures 72, 74, 76, and 78, the totals of the current assets and current liabilities of these companies are tabulated, in Figures 73, 75, 77, and 79, the current ratios are arrayed according to magnitude from the lowest to the highest.

Inspection of Figures 73, 75, 77, and 79 reveals that the dispersion is too great for an average current ratio to be representative of any of the groups. In fact, the extent of variation in the ratios will probably surprise those who have never attempted to compute a standard ratio.

In order to determine whether or not companies in various size groups tend to have similar ratios, the companies have been classified into four groups, according to the stated dollars of assets, as follows:

<u>Group</u>	<u>Cotton Textiles</u>	<u>Portland Cement</u>	<u>Hosiery</u>	<u>Brewing</u>
1	1- 25 million	1-10 million	1- 5 million	1- 5 million
2	26-100 "	11-20 "	6-10 "	6-10 "
3	101-200 "	21-60 "	11-15 "	11-30 "
4	Over 200 "	Over 60 "	Over 15 "	Over 30 "

The group to which a company belongs is indicated in Figures 73, 75, 77, and 79. From an inspection of the arrays, it is observed that there is no tendency for companies in the various groups to have similar ratios.

Determining Factors in Financial Structure

Although the following samples are not conclusive, they are indicative. They tend to show that little uniformity exists within an industry in the matter of relationships in the financial structure.

The figures in the financial statements of a certain enterprise are materially affected by the accounting procedures employed by that enterprise. In the matter of the current ratio, there are two items with respect to which there is considerable difference.

**Current Assets and Current Liabilities of
33 Cotton Textile Companies, 1959
(In thousands of dollars)**

	<u>Current Assets</u>	<u>Current Liabilities</u>
American and Ebird Mills, Inc	\$ 7,488	\$ 1,415
Avondale Mills	20,200	2,789
Beaunit Mills, Inc	41,333	12,000
Berkshire Hathaway, Inc	29,608	3,749
Bibb Manufacturing Company	29,441	4,213
Botany Industries, Inc	32,618	23,895
Burlington Industries, Inc	314,399	79,923
Cannon Mills Company	130,214	27,202
Cone Mills Corporation	85,990	21,528
Cosmos Imperial Mills, Ltd	3,475	590
Dan River Mills, Inc	98,766	33,318
Dominion Textile Company, Ltd	47,874	12,627
Erlanger Mills Corporation	16,878	2,301
Erwin Mills, Inc	20,117	5,037
Fulton Cotton Mills, Inc	19,130	6,480
Graniteville Company	13,521	4,926
Hamilton Cotton Company, Ltd	6,471	4,393
Indian Head Mills, Inc	21,682	6,712
Kendall Company, The	44,178	6,062
Lowenstein (M) and Sons, Inc	121,588	16,426
Monarch Mills	12,271	2,169
Mt Vernon Mills, Inc	15,998	1,760
Pacolet Manufacturing Company	22,370	3,732
Pepperell Manufacturing Company	32,205	5,486
Riegel Textile Corporation	42,857	11,355
Robinson Cotton Mills, Ltd	1,730	947
Sagamore Manufacturing Company	3,488	1,021
Spindale Mills, Inc	1,545	443
Standard-Coosa-Thatcher Company	10,553	2,760
Stevens (J P) and Company, Inc	211,661	67,661
Textiles-Incorporated	11,125	1,040
Thomaston Cotton Mills	15,658	2,635
United Merchants and Manufacturers, Inc	213,925	101,880

Fig 72

in procedure (1) the inventory, and (2) the prepaid expenses—which are included in current assets by some and listed among the noncurrent assets by others

The dominant factor in determining financial structure in most cases is probably the policies pursued by an enterprise. For example, the financial structure of a business will be affected by the choice it makes between renting a building and buying one, between pursuing a hand-to-mouth policy of purchasing merchandise and carrying a large stock, and between incurring a large funded debt and obtaining increased capital contributions from the stockholders. Each enterprise thus has its own structural pattern, which is not necessarily fixed by the industry in which it is

Current Ratios of 33 Cotton Textile Companies, 1959

<u>Group</u>		<u>Current Ratio</u>
2	Botany Industries, Inc.	137%
1	Hamilton Cotton Company, Ltd.	117
1	Robinson Cotton Mills, Ltd.	183
4	United Merchants and Manufacturers, Inc.	210
2	Graniteville Company	271
2	Fulton Cotton Mills, Inc.	295
3	Dan River Mills, Inc.	296
4	Stevens (J. P.) and Company, Inc.	313
2	Indian Head Mills, Inc.	323
2	Beaunit Mills, Inc.	326
1	Sagamore Manufacturing Company	312
1	Spindale Mills, Inc.	349
2	Riegel Textile Corporation	377
1	Standard-Coosa-Thatcher Company	382
4	Burlington Industries, Inc.	393
3	Dominion Textile Company, Ltd.	379
2	Erwin Mills, Inc.	399
3	Cone Mills Corporation	399
3	Cannon Mills Company	479
1	American and Efland Mills, Inc.	529
1	Monarch Mills	568
1	Cosmos Imperial Mills, Ltd.	580
2	Pepperell Manufacturing Company	587
2	Thomaston Cotton Mills	594
2	Pacolet Manufacturing Company	599
2	Bibb Manufacturing Company	699
2	Avondale Mills	724
2	Kendall Company, The	729
3	Lowenstein (M.) and Sons, Inc.	740
1	Erlanger Mills Corporation	734
2	Berkshire Hathaway, Inc.	790
2	Mt. Vernon Mills, Inc.	909
1	Textiles-Incorporated	1,070

Fig. 73

engaged This situation is to be expected from the very nature of American economic organization in independent units in which the management determines the policies to be pursued

The current ratio is dependent not only on accounting procedures but also on the extent to which the management, in its discretion, creates current obligations The limits beyond which it may not go are the maintenance of a satisfactory excess of current assets—preferably of the more liquid types—over current liabilities Much leeway exists for individual discretion within the limits This ratio is also affected by sales policies, for example, if an enterprise sells entirely or largely on a cash basis, the ratio may normally be lower, owing to the fact that cash will be flowing into the business more rapidly and will become available sooner to meet obligations

Ratios involving inventories are affected not only by accounting procedures but also by the size of the inventory, which is to a certain extent discretionary with the management and not necessarily dictated by the requirements of the industry The arithmetic mean of a collection of such ratios of individual enterprises is thus an average affected by the many problems involved, such as merchandising policies, accounting procedures, and price levels,

**Current Assets and Current Liabilities of
16 Portland Cement Companies, 1959**
(In thousands of dollars)

	<u>Current Assets</u>	<u>Current Liabilities</u>
Allentown Portland Cement Company	\$ 8,185	\$ 1,081
Alpha Portland Cement Company	15,637	2,637
California Portland Cement Company	20,093	4,355
Diamond Portland Cement Company	3,654	812
General Portland Cement Company	41,126	16,499
Giant Portland Cement Company	6,403	1,109
Keystone Portland Cement Company	3,325	1,106
Lake Ontario Portland Cement Company, Ltd	1,876	762
Lehigh Portland Cement Company	27,320	10,926
Loughorn Portland Cement Company	2,798	1,636
Medusa Portland Cement Company	14,217	4,655
Missouri Portland Cement Company	12,808	6,064
Monolith Portland Cement Company	3,685	3,041
Monolith Portland Midwest Company	1,319	616
Northwestern States Portland Cement Company	5,453	611
Oregon Portland Cement Company	2,710	821

Fig 74

and as a result it is not a particularly good standard for evaluating the position of individual enterprises

The ratio of capital to liabilities will depend on the extent to which the management elects and is able to depend on creditors for financing. Occasionally, however, there are tendencies discernible within industries, for example, in highly competitive and speculative industries, there is observed a tendency toward a ratio

Current Ratios of 16 Portland Cement Companies, 1959

Group		Current Ratio
2	Monolith Portland Cement Company	121%
1	Longhorn Portland Cement Company	171
3	Missouri Portland Cement Company	211
1	Monolith Portland Midwest Company	214
2	Lake Ontario Portland Cement Company, Ltd	246
4	General Portland Cement Company	249
4	Lehigh Portland Cement Company	250
2	Keystone Portland Cement Company	301
3	Medusa Portland Cement Company	305
1	Oregon Portland Cement Company	330
1	Diamond Portland Cement Company	450
3	California Portland Cement Company	461
2	Giant Portland Cement Company	577
3	Alpha Portland Cement Company	593
2	Allentown Portland Cement Company	755
2	Northwestern States Portland Cement Company	892

Fig 75.

Current Assets and Current Liabilities of 11 Hosiery Companies, 1959 (In thousands of dollars)

	Current Assets	Current Liabilities
Adams-Millis Corporation	\$ 6,930	\$ 1,674
Alba Hosiery Mills, Inc	2,274	928
Belding-Corticelli, Ltd	3,015	498
Brown Durrell Company	2,043	391
Chadbourn Gotham, Inc	19,321	10,093
Claussen Hosiery Company	2,485	426
Durham Hosiery Mills	1,261	142
General Products Manufacturing Corporation, Ltd	9,661	4,967
Kayser-Roth Corporation	44,307	14,918
Mojud Company, Inc	5,623	1,265
National Hosiery Mills, Ltd	2,014	1,397
Real Silk Hosiery Mills	1,781	464
Van Raalte Company, Inc	19,034	4,439
Wayne Knitting Mills	7,959	1,326

Fig 76

of capital to liabilities higher than in industries of a more conservative nature. Aside from such factors, the ratio of capital to liabilities is a matter governed by the policy of the management of the enterprise.

The ratio of sales to receivables is affected by the terms granted. In those enterprises which grant long terms, the ratio tends to be low, and in those granting short terms it tends to be high. An average ratio of sales to receivables for an industry will have significance only if all its members grant the same terms. If they do not, significant averages can be found only by grouping the enterprises granting similar terms. Needless to say, enterprises that sell on installment terms should be segregated in the computation of this ratio.

Ratios involving fixed assets are dependent not only on managerial policies but also on the purchasing power of money at the date of acquisition of such assets. Since there are so many different price levels at which the assets in an industry may have been acquired, an average of ratios involving fixed assets constitutes an average of items that are not homogeneous.

Therefore, the type of business in which an enterprise is engaged is not the determining factor in the proportions of its financial structure, but rather these proportions depend on such matters as managerial policies, accounting procedures, and the price levels at which its assets were acquired.

Current Ratios of 14 Hosiery Companies, 1959

Group		Current Ratio
4	Chadbourn Gotham, Inc	191%
3	General Products Manufacturing Corporation, Ltd	195
1	National Hosiery Mills, Ltd	209
1	Alba Hosiery Mills, Inc	245
4	Kayser-Roth Corporation	297
2	Real Silk Hosiery Mills	384
3	Adams-Millis Corporation	414
4	Van Raalte Company, Inc	429
2	Majud Company, Inc	445
1	Brown Durrell Company	523
2	Claussner Hosiery Company	583
3	Wayne Knitting Mills	600
1	Belding-Cortacelli, Ltd	605
1	Durham Hosiery Mills	888

Fig 77.

Composite Statements of Industries

A method for obtaining standard ratios that has been employed is to construct composite financial statements by adding together like items in all the statements obtainable in an industry and to compute the ratios from this composite. This procedure is similar to the accountant's method of constructing a consolidated statement for a parent company and subsidiaries. However, it

Current Assets and Current Liabilities of 35 Brewing Companies, 1959 (In thousands of dollars)

	<u>Current Assets</u>	<u>Current Liabilities</u>
Anheuser-Busch, Inc	\$58,336	\$12,166
Burger Brewing Company	2,783	732
Bürgermeister Brewing Corporation	7,313	1,773
Canadian Breweries, Ltd	60,644	21,537
Cleveland-Sandusky Brewing Corporation	476	196
Dow Brewery, Ltd	23,921	4,199
Drewrys Ltd, U S A, Inc	7,514	4,176
Duquesne Brewing Company of Pittsburgh	5,081	2,133
E and B Brewing Company, Inc	468	150
Falstaff Brewing Corporation	21,757	8,582
Fox Head Brewing Company	1,120	613
Goebel Brewing Company	3,170	3,118
Heileman (G) Brewing Company	3,532	1,142
International Breweries, Inc	4,038	1,272
Jacob Ruppert	5,590	2,828
Kingsbury Breweries Company	865	842
Kueger (G) Brewing Company	2,015	1,669
Labatt (John), Ltd	14,882	9,021
Lone Star Brewing Company	4,305	2,420
Lucky Lager Brewing Company	14,532	4,168
Lucky Lager Breweries, Ltd	2,084	937
Minneapolis Brewing Company	3,191	1,373
Molson's Brewery, Ltd	18,571	6,828
National Brewing Company of Michigan	2,439	315
Olympia Brewing Company	6,077	2,778
Pabst Brewing Company	32,504	16,112
Pearl Brewing Company	4,970	1,913
Pfeiffer Brewing Company	5,008	2,610
Pittsburgh Brewing Company	4,832	2,040
San Miguel Brewery, Inc	70,906	32,295
Sicks' Breweries, Ltd	5,392	2,019
Sicks' Rammer Brewing Company	3,446	1,168
Simon (Wm) Brewery	604	284
Sterling Brewers, Inc	4,344	1,403
Western Canada Breweries, Ltd	7,278	2,506

Fig. 78.

does not provide for the elimination of intercompany transactions, that is, it disregards the possibility of transactions among the companies in the industry. For example, if one company owes money to another, the same sum is represented in one balance sheet as an asset and in another as a liability.

A composite of many statements in an industry is a rather unreal thing. In the case of a parent company and subsidiaries, the consolidated statement tells a true story—more so than a collection of statements of the separate affiliated companies—for in reality such a group of corporations is but a single entity whose

Current Ratios of 35 Brewing Companies, 1959

Group		Current Ratio
2	Goebel Brewing Company	102%
1	Kingsbury Breweries Company	103
2	Krueger (G.) Brewing Company	121
4	Lubatt (John), Ltd	165
3	Lone Star Brewing Company	178
3	Drewnys Ltd., U. S. A., Inc	180
1	Fox Head Brewing Company	183
3	Pfeiffer Brewing Company	192
3	Jacob Ruppert	198
4	Pabst Brewing Company	202
3	Olympia Brewing Company	219
4	San Miguel Brewery, Inc	220
3	Lucky Lager Breweries, Ltd	222
2	Minneapolis Brewing Company	232
3	Pittsburgh Brewing Company	237
3	Duquesne Brewing Company of Pittsburgh	238
1	Cleveland-Sandusky Brewing Corporation	243
1	Simon (Wm.) Brewery	244
4	Canadian Breweries, Ltd	247
4	Falstaff Brewing Corporation	254
2	Pearl Brewing Company	260
3	Sicks' Breweries, Ltd	267
4	Molson's Brewery, Ltd	272
3	Western Canada Breweries, Ltd	290
3	Sicks' Rainier Brewing Company	295
4	Lucky Lager Brewing Company	349
2	Burger Brewing Company	380
2	Heileman (G.) Brewing Company	309
2	Sterling Brewers, Inc	310
1	E and B Brewing Company, Inc	312
2	International Breweries, Inc	317
3	Burgermeister Brewing Corporation	412
4	Anheuser-Busch, Inc	480
4	Dow Brewery, Ltd	570
1	National Brewing Company of Michigan	774

Fig. 79.

various parts usually have a close relationship. Often the existence of the separate corporations is but a legal technicality, they are in reality but departments of one organization, and for all practical purposes the various corporations should be considered as one.

An industry, however, as constituted under a system of free enterprise, consists of many independent units, and the assets, liabilities, sales, and so forth, of one unit have no relation to those of another. Financial statement ratios are intended to measure relationships, but ratios computed from such a composite statement measure unrelated things. Among affiliated companies, Company *A* may readily borrow Company *B*'s cash to pay its current liabilities, but such interaction of assets and liabilities does not exist among independent companies. A composite statement of an industry would be valid in a communistic society, in which all business units are but branches of a state-owned industry, but it is contrary to fact in a society in which business is organized on a free enterprise basis.

Another argument against the procedure of constructing a composite statement for an industry and computing ratios from it is that it permits no testing of the data to see whether or not an average would be representative, as was done in the case of the industries discussed above. The method of the composite statement makes the tacit assumption that the individual concerns included in the composite are quite similar in respect to the proportions of their financial structure.

The ratios of financial structure can be used logically only as measures of individual enterprises and not of an industry as a whole simply because an industry as organized in the United States does not function as a unit.

The procedure of obtaining an average of the individual current ratios is the more logical one, but it may be followed only when the individual ratios show a central tendency. Other measures, such as modes, medians, and quartiles, have been used in standard ratio research, but these averages will be no more useful than the arithmetic mean unless the fundamental requirement that the values tend toward concentration about a central value is met.

Operating Standards

It appears probable that more reliable standards can be obtained in the matter of operations than in the matter of financial structure, for certain of the difficulties connected with the balance sheet are not to be encountered in the income statement. For example, a large proportion of the transactions reflected in the income statement are recorded in the price level of the current year, so that, unless extreme fluctuations took place in the purchasing power of money within that year, the problem of the basis of valuation, so troublesome in the case of the balance sheet, does not enter into the income statement, except in the matter of depreciation and, to a certain extent, inventories. Likewise, less room exists for personal opinion, since the expenses, for example, are stated largely on a factual basis.

In order to obtain reliable operating standards in an industry, it would be necessary for all members to adopt a rigidly prescribed accounting procedure. The establishment of a system of this kind would, however, require such close collaboration that it might readily be construed as a combination in restraint of trade, and it would create a regimentation which might become so irksome as to cause inefficiency.

The outstanding work in operating standards has been performed by the Bureau of Business Research of the Harvard Graduate School of Business Administration, particularly in the fields of department and specialty stores and limited price variety chains.¹ A feature of these studies is that not only general standards or "common figures" but also "goal figures" representative of the most profitable firms in each group have been compiled.

Availability of Standards

Added to the many difficulties to be encountered in the compilation of standard ratios is that of making them available in time to be useful. Since it is admitted by all concerned that standards are continually changing, and since it would require many months before the necessary data for an industry could be com-

¹ See the various studies, *Operating Results of Department and Specialty Stores*, and *Expenses and Profits of Limited Price Variety Chains*.

piled, it is possible that, when the standard ratios would become available, they would be too antiquated to be of any value for practical purposes

Standard Ratio Research in the Future

Although this chapter tends to cast a shadow of skepticism on standard ratio work, it is not intended to preclude the possibility that useful work in this field will be accomplished in the future. On the contrary, it is probable that much will be achieved by those who will approach the subject by studying carefully the problems peculiar to each industry and adapting their methods to these problems.

Three important requirements must be met before the search for standards for any particular industry may be initiated.

- 1 Uniformity in accounting methods should be achieved within the industry by the adoption of a uniform system of accounting, including a classification of accounts and uniform depreciation methods.

- 2 A uniform date for closing the books should be selected for the industry, possibly based on the principle of the "natural business year."

- 3 The industry should be carefully studied for the purpose of dividing it into homogeneous groups on such bases as are suggested in this chapter, or others.

The study of the financial statements will commence with the computation of the various logical ratios of each group in the industry. After the ratios have been tabulated in order from the lowest to the highest, they should be scrutinized to see whether or not they show a sufficient central tendency for the purpose of computing an average. If they do, the average may be accepted as representative of the group.

However, since it is quite probable that very few industrial groups based on type of product, type of operations, location, size, clientele, or other classification will show representative or characteristic proportions, the variations must be accounted for in terms of managerial policies. Therefore, wherever possible, subdivisions should be made on the basis of such managerial policies as can be determined. Thus, in a study of the current ratio, those

firms which sell for cash will be segregated from those selling on credit. In a study of the ratio of sales to receivables, the members will be arranged in groups according to the terms granted, if the terms are not uniform throughout the industry.

Divisions on the basis of managerial policy seem most logical, for different managerial policies, all of which may be perfectly sound, will produce different structural proportions, and no one of these proportions will be the only one that is indicative of a favorable condition. Even the arrangement according to managerial policies cannot be a very precise one, however, for managerial policy is, to a large extent, an individual thing, so that, even when the enterprises are classified on this basis, it will not necessarily follow that the ratios will be similar.

It is not improbable that in many industries it will be found that the enterprises which pursue similar policies and have structural proportions within certain limits have the greatest measure of success. If this assumption proves to be correct, the method of stating standards should be in the form of maxima and minima—that is, the range within which the most successful enterprises are to be found. The statement of standards in this manner is consistent with the American way of arranging business in independent units conducted on the basis of individual managerial decisions and not dictated to from without.

However, since no acceptable standard ratios exist, the system of analysis outlined in this book, which might be called the *self-contained method*, is recommended.

Sundry Measuring Devices

The analysis of the financial statements is but one phase of the analysis of the condition of a business enterprise. The complete analysis will necessarily include the consideration of information which is not part of the financial statements. Since the scope of the present book is limited to only one phase of enterprise analysis, that of the financial statements, these matters are not treated here but are to be found in books on management, credit, and investment. It is, however, appropriate to indicate briefly some of the other kinds of information which the analyst uses as a basis for interpreting condition.

The Factor of Management

The ability of those managing a business is often reflected in the balance sheet by satisfactory proportions among the amounts of the items shown. It may also be indicated in the income statement by a satisfactory adjustment of expenses to changing sales volume. Often, however, it is not visible in the financial statements, for certain relationships may be caused by factors beyond the control of the management. Unsatisfactory ratios may sometimes be due to generally poor business conditions, while favorable ratios may be due merely to chance.

The opinion of the analyst will be influenced by the character and business ability of those guiding a business. It is conceivable that, although the financial statements of a business may reflect poor condition, a high opinion of the ability of the management may raise the analyst's estimate of future prospects of the enterprise. On the other hand, although the statements may reveal a

satisfactory condition, a poor opinion of the ability of those in charge will tend to lower his estimate

Credit Analysis

The credit man is much interested in information regarding the ability and character of those managing a business he is analyzing, and he will invariably seek to obtain such information. He may obtain it through personal contact or through indirect investigation. The indirect investigation may be made through credit agencies or through business houses or banks which know the enterprise under examination. Important information is obtained from the trade in regard to the general reputation of the business and its promptness in making payments, from banks are obtained such facts as the amount of credit extended and the satisfactoriness of the account. This type of analysis is, like that of the economic forces underlying a business enterprise, entirely on a qualitative basis, but to the credit man it is just as important as the quantitative measurement of the financial statements.

Debt-Paying Ability

The most important consideration for the credit analyst is probably whether or not an enterprise will be able to meet its obligations. The pragmatic test of debt-paying ability is the prompt payment of obligations when they become due. A business is sometimes given quite a satisfactory credit rating if it consistently meets this test, even if other factors are not quite so good as they should be. However, the historical study should be supplemented by an examination of the factual data shown by the financial statements and other records. Various measures of debt-paying ability, in addition to those previously mentioned, will now be discussed.

Turnover of Current Assets

Since debts are usually paid in cash, a business, in order to pay debts promptly, must have a sufficient amount of cash available when debts mature. To provide this supply, an adequate

inflow of cash is necessary, and this inflow is effected by the turnover of the current assets

The turnover of current assets is in accordance with the trading cycle cash, to merchandise, to receivables, and back to cash. In a business conducted on a cash basis, if current assets other than those of the trading cycle are ignored, the turnover of current assets will be the same as the turnover of merchandise, which is the rate at which the inventory is completely disposed of. As has been shown, this turnover is obtained by dividing the cost of the goods sold by the average inventory, and it is stated either in terms of days or the number of times per annum.

When merchandise is sold on account, the turnover of current assets will be the turnover of merchandise plus the turnover of receivables. The latter is the rate at which receivables are collected or, in other words, the average length of time required to collect the receivables. If it is assumed that in a certain business the merchandise is turned over on the average in 60 days and that the receivables are collected on the average in 30 days, the turnover of current assets averages 90 days, that is, the trading cycle is completed in roughly 90 days, or four times per annum. In a manufacturing concern, it would be necessary to add to this the period of time required to manufacture the commodities sold.

Adequacy of Working Capital

It has been seen that the working capital of a business is that portion of the total of the current assets contributed by the owners. Its normal proportion depends upon the relative turnover of current assets and current liabilities.

In a business in which goods are purchased on 90 days' credit and sold for cash every 30 days, little need exists for any investment by the owners in the current assets, the financing may be done almost entirely on the equity of the current creditors. On the other hand, if goods are bought on 30-day terms and are turned over every 90 days, the current creditor equity should not exceed one-third of the current assets, for only one-third of the goods are sold before all the goods of a particular purchase must be paid for.

In the first case mentioned, a current ratio slightly above 100 per cent would probably be normal, whereas in the second a

normal condition would require a current ratio of at least 300 per cent. To state the matter in terms of the ratio of working capital to current liabilities, in the first case the normal ratio is just above 0 per cent, for practically no working capital is required, and in the second the ratio should be at least 200 per cent, because two-thirds of the merchandise must be financed by the working capital fund.

In actual practice the computation would not be so simple as outlined above, for a business may offer various terms and may grant cash discounts, and all customers may not pay promptly. Similarly, creditors would grant various terms to the business. Also, this discussion has ignored the current expenses. These should, in a going concern, be provided by the gross margin collected from customers, if not, they will have to be provided by the working capital fund. Therefore, no great degree of precision is to be expected in such a computation, it will of necessity be on an approximate basis, but nevertheless it will be helpful in judging current position.

The internal analyst has little difficulty in making an estimate of working capital requirements as outlined above. The external analyst, however, will usually not have available data as to the terms of purchase and sale, and so his computations will be less precise than those of the internal analyst.

The above procedure will be useful to the external analyst in cases in which certain terms are customary throughout an industry. If it is usual, for instance, for merchants in a certain line of business to buy on long terms and to sell on short terms, the analyst should not expect a merchant in this line to have as large a working capital as one engaged in a business in which the reverse situation obtains. The terms that are customary in an industry will also provide a guide to what should be expected as a normal current ratio.

To summarize the foregoing. In investigating the current position of a business, it is important to determine whether or not the working capital is adequate. A measure is provided by the ratio of working capital to current liabilities—a comparison of the wealth supplied by the current creditors with the current wealth supplied by the owners or long-term creditors or both. This ratio should be interpreted in the light of a comparison of the rate of turnover of current assets with the rate of turnover of current liabilities. A rapid turnover of current assets with a slow

turnover of current liabilities requires but a low working capital ratio, conversely, a rapid turnover of current liabilities and a slow turnover of current assets requires a high working capital ratio.

Sales and Working Capital

A relationship exists between the sales of a business and the amount of its working capital. Normally a large sales volume requires a larger working capital than a comparatively small sales volume, for usually a larger amount of current wealth will be required to carry the sales volume. The ratio of sales to working capital is sometimes used to check the relationship, but it is hardly possible to establish a norm, and, since the ratio is used rather for the comparison of the sales and working capital in a series of years, such a comparison can be effected more satisfactorily by the use of the trend ratios of sales and working capital.

Velocity Method of Analyzing Debt-Paying Ability

The current ratio method of analyzing debt-paying ability is on a liquidation basis, its aim is to determine whether or not a business could pay its debts if it had to liquidate. Many analysts feel that this point of view cannot be satisfactorily applied to a going concern.

According to the foregoing discussion, debt-paying ability may be analyzed by a comparison of the velocity of the current assets and current liabilities. For a practical application of this procedure, information is required regarding the maturity of the receivables and payables, and this information is unfortunately not commonly available to the external analyst. The credit man, however, may obtain it from an applicant for credit. This method is at present in an experimental stage, but, if it is commonly adopted, there is no reason why the necessary information could not be obtained as easily as the data now usually requested. Some credit agencies now require an aging of the accounts receivable in statements submitted to them.

The required data are obtained by aging both the receivables and the payables. These data may then be included in a current position schedule on the estimated time-cash-realizable basis, as shown in Figure 80. The enterprise whose current position is

Schedule of Current Position

<i>Current Assets</i>		<i>Current Liabilities</i>	
Cash		Notes payable in 30 days	\$ 1,000
Accounts receivable		Accounts payable	
Due in 30 days	\$17,500	Due in 30 days	\$12,000
30 to 60 days	8,000	30 to 60 days	7,000
60 to 90 days	2,000	60 to 90 days	—
more than 90 days	500	more than 90 days	4,000
			<u>23,000</u>
Merchandise			
Expected cash sales			
In 30 days	\$ 2,000		
30 to 60 days	2,000		
60 to 90 days	2,000		
Expected sales on account within 90 days	25,000		
	<u>31,000</u>		
			<u>\$60,000</u>
			<u><u>\$24,000</u></u>

Fig 80.

shown in this schedule has an average merchandise turnover of four times per annum. The current ratio is 250 per cent, the working capital is \$36,000, and the working capital-to-liabilities ratio is 150 per cent, indicating that the equity of the owners in the current assets is one and one-half times that of the current creditors.

This schedule, of course, should not be regarded as a cash budget, since it does not include estimates for expenses of the business after the balance sheet date. However, it gives a fair idea of the turnover of the current items appearing in the balance sheet and apparently enables the credit man to form a more exact opinion as to debt-paying ability than does the ratio method.

Estimated Income

In most enterprises, financial statements are compiled only once a year, as a result, the information in such statements may be quite out of date at the time of application for credit. For example, on October 10, 1960, the data contained in the statements of December 31, 1959, may no longer convey information on which the credit man can rely. In order to overcome this difficulty, he may request a copy of the trial balance of the applicant's ledger as of September 30, 1960.

Let it be assumed that a credit man has received from a client, Mr. S. T. Adams, his balance sheet as of December 31, 1959 (Figure 81), income statement for year ended December 31, 1959 (Figure 82), and trial balance as of September 30, 1960 (Figure 83).

If the total assets except merchandise are subtracted from the total liabilities and capital, the difference is what is known as the "break-even" inventory—that is, the amount of inventory it would be necessary to have available on September 30, 1960, so that the business would have neither a net income nor a net loss. If the actual inventory is greater, the excess will be the net income, and, if it is less, the deficit will be the net loss.

The inventory of S. T. Adams on September 30, 1960, may be estimated as shown in Figure 84 by the use of an estimated cost of goods sold based on his preceding statement, which indicates that the cost of the goods sold was 60 per cent of sales, net of discounts, returns and allowances. The addition of the purchases to the initial inventory gives the total goods to be accounted for

From this amount the estimated cost of the goods sold is deducted, leaving the estimated merchandise inventory as of September 30, 1960. Upon deducting from this the break-even inventory, the estimated net income for the nine months, before adjustment for depreciation and accrued and deferred items, is obtained. The depreciation for the nine months may readily be estimated by using the depreciation rates found in the 1959 statements. Upon deducting the depreciation, the estimated net income for the nine months, before adjustment for accrued and deferred items, is obtained. Since the purpose of this work is merely to estimate whether the business has maintained its financial position since the last financial statements were prepared, it is usually not necessary to carry the computation further.

S T ADAMS
Balance Sheet
December 31, 1959

<i>Assets</i>			
<i>Current Assets</i>			
Cash		\$ 6,976	
Notes receivable		2,100	
Accounts receivable	\$11,224		
Less Allowance for bad debts	300	10,924	
Merchandise inventory		10,796	
Interest income accrued		15	
Prepaid expenses		95	
Total current assets			\$30,906
<i>Fixed Assets</i>			
Lot		\$ 6,000	
Building	\$15,000		
Less Allowance for depreciation	1,050	13,950	
Furniture and fixtures	\$ 2,900		
Less Allowance for depreciation	342	2,558	
Delivery equipment	\$ 3,900		
Less Allowance for depreciation	1,275	2,625	
Total fixed assets			25,133
			<u>\$56,039</u>
<i>Liabilities and Capital</i>			
<i>Current Liabilities</i>			
Notes payable		\$ 3,200	
Accounts payable		8,451	
Accrued expenses		335	
Total liabilities			\$11,986
S T Adams, Capital			44,053
			<u>\$56,039</u>

Fig 81

Investment Analysis

Investment analysis is usually a more comprehensive analysis than credit analysis. The principal, although not the only, object of credit analysis is to determine whether or not the enterprise under consideration will be in a position to pay its debts when they mature. The investment analyst, however, is deeply concerned with all phases of the condition of the enterprise he analyzes. Inasmuch as investment is definitely a more or less permanent

S T ADAMS			
Income Statement			
For Year Ended December 31, 1959			
Sales			\$60,483
Less Discounts, returns and allowances			<u>1,168</u>
Sales, net of discounts, returns, and allowances			\$59,315
Cost of Goods Sold			
Inventory, January 1, 1959		\$11,603	
Purchases	\$35,407		
Less Discounts and returns	<u>975</u>	34,432	
Freight and cartage inward		<u>350</u>	
		\$46,385	
Less Inventory, December 31, 1959		<u>10,796</u>	
Cost of goods sold			<u>35,589</u>
Gross margin			\$23,726
Selling, General, and Administrative Expenses			
Salesmen's salaries	\$ 7,125		
Depreciation of delivery equipment	975		
Office salaries	1,700		
Office supplies	576		
Taxes	950		
Light and heat	124		
Insurance	113		
Depreciation of furniture and fixtures	290		
Depreciation of building	750		
Bad debts	<u>300</u>	12,903	
			\$10,823
Other Income			
Interest income	\$ 15		
Rent income	<u>1,500</u>	1,515	
			\$12,338
Income Deductions			
Interest expense			<u>30</u>
Net income for the year			<u>\$12,308</u>

Fig 32

relationship, the study of trends, both in the business under consideration and in the industry in which it is engaged, is essential.

Quantitative trend studies of the financial record of achievement by the management are made both as to the growth of the enterprise and as to the size and stability of its earnings. Qualitative investigations are conducted to determine the status of the industry as a field for investment, the particular risks inherent in the industry, and its prospects for the future. The position in the industry of the company under consideration is also important. A study of the industry and the position of the enterprise in it involves all the underlying economic forces which have been reviewed in Chapter 12.

S T ADAMS
Trial Balance
September 30, 1960

Cash	\$ 5,520	
Marketable securities	1,000	
Notes receivable	500	
Accounts receivable	17,682	
Allowance for bad debts		\$ 225
Merchandise inventory	10,796	
Lot	5,000	
Building	16,250	
Allowance for depreciation of building		1,050
Furniture and fixtures	2,900	
Allowance for depreciation of furniture and fixtures		342
Delivery equipment	5,100	
Allowance for depreciation of delivery equipment		1,275
Notes payable		5,500
Accounts payable		12,265
S T Adams, Capital		44,053
S T Adams, Drawing	7,250	
Sales		50,593
Sales discounts	620	
Sales returns and allowances	872	
Purchases	35,640	
Purchase discounts		475
Purchase returns and allowances		287
Freight and cartage inward	450	
Salesmen's salaries	5,246	
Office salaries	975	
Office supplies	387	
Taxes	850	
Light and heat	94	
Insurance	42	
Interest income		12
Rent income		1,125
Interest expense	28	
	<u>\$117,202</u>	<u>\$117,202</u>

Fig 83

Measurement of Capital Structure

Accountants use the term *capital* to designate the proprietary equity. Investment writers use the term *capital structure* in a broader sense to include not only the proprietary equity but also the equity of all long-term creditors, commonly represented by bond issues. In this connection the term *capital structure* has superseded the term *capitalization* employed in the past. Some investment writers even go so far as to include the current liabilities in the capital structure, thus making the term synonymous with *total equities*. In the following discussion the term *capital structure*

S T ADAMS

Estimated Income

For Nine Months Ended September 30, 1960

Total liabilities and capital (per trial balance)		\$54,568
Less Total assets (except merchandise) per trial balance		<u>51,060</u>
Break-even inventory		<u>\$ 3,508</u>
Merchandise inventory, December 31, 1959		\$10,796
Add Purchases		35,640
Freight and cartage inward		<u>450</u>
		\$46,886
Less Discounts	\$475	
Returns and allowances	<u>287</u>	<u>762</u>
		\$46,124
Less Cost of goods sold (estimated 60% of \$49,101)		<u>29,461</u>
Merchandise inventory, September 30, 1960 (estimated)		<u>\$16,663</u>
Merchandise inventory, September 30, 1960 (estimated)		\$16,663
Break-even inventory		<u>3,508</u>
Estimated net income for 9 months ended September 30, 1960, before adjustment for depreciation and accrued and deferred items		\$13,155
Estimated depreciation for 9 months		
Building	\$610	
Delivery equipment	956	
Furniture and fixtures	<u>218</u>	<u>1,784</u>
Estimated net income for 9 months ended September 30, 1960, before adjustment for accrued and deferred items		<u>\$11,371</u>
The cost of goods sold in 1959 was 60% of sales, net of discounts, returns, and allowances		
The rates of depreciation, as seen from the 1959 statements, are		
Building	5%	per annum
Delivery equipment	25%	" "
Furniture and fixtures	10%	" "

Fig 84.

will be used to comprise the total book value of all outstanding stocks and bonds (or long-term notes¹), plus retained earnings and other additions to capital. It thus comprises the investment of both the stockholders and the bondholders (or holders of long-term notes¹).

In addition to the various quantitative measures of financial statements which have been discussed, a number of others are employed by investment analysts in connection with the investigation of the capital structure of corporations. These measures are based primarily on items in the financial statements, but they also include comparisons involving market prices of securities. Some of the measures in common use will now be discussed.

The investment analyst measures the composition of the capital structure of a corporation, that is, the proportions represented by each of the three classes of securities—bonds, preferred stock, and common stock—as in the following illustration:

Bonds	\$ 250,000	12.5%
Preferred stock	350,000	17.5
Common stock and retained earnings	1,400,000	70.0
	<u>\$2,000,000</u>	<u>100.0%</u>

The relative investment of the stockholders and bondholders is of concern to the investment analyst. As the bond investment becomes larger in proportion to that in stocks, the position of the stockholders weakens because of the larger prior claims of the bondholders. The position of the bondholders also weakens because of the smaller margin of safety afforded by the investment of the stockholders. Investment writers have held that in an industrial enterprise the capital structure becomes unsatisfactory when the bonds exceed 25 per cent.

In the above illustration, 87.5 per cent of the capital structure has been contributed by the stockholders, and 12.5 per cent has been contributed by the bondholders. The equity of the stockholders is \$1,750,000, while that of the bondholders is \$250,000, or for each dollar contributed by the bondholders, the stockholders have contributed \$7.

A variant of this measure is to price the stocks at market value. This will show the extent to which the bonds are covered by the equity of the stockholders on the basis of the investing

¹ In cases where, instead of obtaining funds by issuing bonds, a corporation obtains a loan from a financial institution on long-term notes.

public's opinion of the value of the stocks. Let it be assumed that upon pricing the stocks at average market quotations for the past year, the capital structure will be as follows:

Bonds (at par)	\$ 250,000	18.5%
Preferred stock (at market)	300,000	22.2
Common stock (at market) and retained earnings	800,000	59.3
	<u>\$1,350,000</u>	<u>100.0%</u>

On this basis the stockholders contributed only \$4.40 to each dollar contributed by the bondholders.

Leverage

If the capital structure contains either bonds or preferred stock or both, investment analysts measure what is called the *leverage* of the common stock. To illustrate, let it be assumed that the capital structure of a certain corporation consists of \$2,000,000 of 6 per cent bonds, \$4,000,000 of \$100 par value 7 per cent preferred stock, and 500,000 shares of no-par value common stock with an equity of \$4,000,000. Dividing the capital structure, \$10,000,000, by the equity of the common stock, \$4,000,000, gives a leverage of 2.5, that is, for each dollar invested by the common stockholders, the holders of senior securities have invested \$2.50. This places the common stock in a relatively poor position, since there is a heavy drain on the income for the bond interest and the claims of the preferred stock before dividends are available for the common stock.

If in this case the earnings for a certain year before deduction of bond interest should be \$1,500,000, the amount available for the common stockholders may be calculated in the following manner:

Income before bond interest	\$1,500,000
Less Bond interest	120,000
Net income before federal income taxes	<u>\$1,380,000</u>
Less Federal income taxes	712,000
Net income for the year	<u>\$ 668,000</u>
Less Preferred dividend requirement	280,000
Net income available for common stock	<u>\$ 388,000</u>
Earnings per share on common stock (500,000 shares)	\$.776

A leverage above 2 in an industrial corporation signifies that the stated amount of the senior securities is twice that of the

common stock, and is considered high by investment analysts. When the leverage is high, the effect of an increase or decrease in the income before bond interest, on the earnings available for the common stockholders is greater than the rate of that increase or decrease. This fact is shown by calculating the amount available for the common stockholders on the basis of an increase of 10 per cent or a decrease of 10 per cent in the income before bond interest in the above case.

	10% <u>Decrease</u>	10% <u>Increase</u>
Income before bond interest	\$1,350,000	\$1,650,000
Less Bond interest	120,000	120,000
Net income before federal income taxes	<u>\$1,230,000</u>	<u>\$1,530,000</u>
Less Federal income taxes	634,000	790,000
Net income for the year	<u>\$ 596,000</u>	<u>\$ 740,000</u>
Less Preferred dividend requirement	280,000	280,000
Net income available for common stock	<u>\$ 316,000</u>	<u>\$ 460,000</u>
Earnings per share on common stock (500,000 shares)	\$.632	\$.92
Increase or decrease in earnings	-10%	+10%
Increase or decrease in amount available for common	-18.5%	+18.5%

It is thus seen that a "leverage stock" is subject to sharp changes in earnings and, as a result, fluctuations in market price. This fact puts it in a speculative position, its owners take a large risk in anticipation of a large profit.

Some analysts include the current liabilities in their calculation of leverage, as is also done in the analysis of the capital structure. Assuming current liabilities of \$1,000,000 in the above illustration, the balance sheet would be

Assets	\$11,000,000	Current liabilities	\$ 1,000,000
		Bonds	2,000,000
		Preferred stock (par)	4,000,000
		Common stock equity	4,000,000
	<u>\$11,000,000</u>		<u>\$11,000,000</u>

Dividing the total of the assets, which is the same amount as total equities, \$11,000,000, by the common stock equity, \$4,000,000, gives a leverage of 2.75. This method is more conservative, since it gives recognition to the claims of the current creditors against the assets.

In contrast to this, a low-leverage stock offers security, because the interest and preferred dividend claims are small or non-existent and most of the earnings are available as dividends on the common stock.

Bond Measurements

The analysis of the safety of a bond investment consists in determining the asset protection of principal and the adequacy of the corporation's earnings for the payment of the bond interest.

Ratio of fixed assets to funded debt Comparison of the funded debt with the assets on which the bondholders have a prior claim (if the bonds are mortgage bonds) will indicate roughly the degree of protection of the principal. For this purpose the ratio of fixed assets (property, plant, and equipment) to funded debt is employed. If the book value of the property, plant, and equipment is \$575,000 and the funded debt is \$100,000, the ratio will be 575 per cent, indicating that for every \$1.00 of funded debt there is \$5.75 book value of property, plant, and equipment.

Times interest charges earned The adequacy of earnings for the payment of bond interest is ascertained by computing the number of times interest charges have been earned. For such computation assume the following case:

Income before bond interest	\$150,000
Less Bond interest	12,000
Net income before federal income taxes	\$138,000
Less Federal income taxes	66,000
Net income for the year	<u>\$ 72,000</u>

Dividing the net income before bond interest, \$150,000, by the bond interest, \$12,000, it is found that the bond interest has been earned 12.5 times. Some analysts consider 6 times the minimum for a "good" industrial bond.

Strictly speaking, this computation is quite correct since it is the income before bond interest that is available for the payment of the interest on the bonds, and some analysts make the computation in this manner. Others, however, who may be called "conservative" prefer to deduct the federal income taxes from the income before dividing by the bond interest. According to this method the computation would be $(\$150,000 - \$66,000) \div \$12,000 = 7$ times, a lower rate than is obtained by the other method.

Ratio of working capital to funded debt Although a corporation may have an excellent earnings record, it does not follow that an adequate amount of the corporate wealth has been kept

in sufficiently liquid form to meet obligations to the bondholders. Accordingly, the ratio of working capital to funded debt is computed. If the working capital is \$200,000 and the funded debt is \$125,000, then, dividing \$200,000 by \$125,000, it is found that the ratio is 160 per cent. This indicates that there is \$1.60 of working capital for each \$1.00 of funded debt.

Disposition of bondholders' investment Another type of analysis of the position of the bonds is the consideration of the disposition of the investment made by the bondholders. Consider the following balance sheet:

Current assets	\$ 180,000	Current liabilities	\$ 95,000
Non-current assets	1,000,000	Funded debt	150,000
		Capital	935,000
	<u>\$1,180,000</u>		<u>\$1,180,000</u>

After the claims of the current creditors have been deducted from the current assets, \$85,000, which is the working capital, remains. Since the funded debt is \$150,000, \$85,000 of the investment of the bondholders is represented by current assets and \$65,000 by noncurrent assets.

The above comparison achieves the same results as the ratio of capital to noncurrent assets already mentioned, since the capital is \$935,000, the investment of the creditors—in this case, bondholders—in the noncurrent assets is \$65,000.

A third method for measuring the relationship is by means of a comparison of the current assets and total liabilities. The current assets are \$180,000, and the total liabilities are \$245,000, therefore, \$65,000 of the creditors' money—in this case, funded debt—has been invested in noncurrent assets.

As in the case of all comparisons, the interpretation is made by the analyst in the light of the underlying facts. In the present instance, the date of maturity of the bonds is important. If a redemption date is near, a greater degree of liquidity is required than would otherwise be needed.

Preferred Stock Measurements

Earnings per share The earnings on preferred stock are commonly expressed in the form of earnings per share. This is obtained by dividing the net income by the number of shares

outstanding Let it be assumed that the corporation whose income statement contains the following data has 2,500 shares of preferred stock outstanding

Income before bond interest	\$250,000
Less Bond interest	30,000
Net income before federal income taxes	<u>\$220,000</u>
Less Federal income taxes	<u>130,000</u>
Net income for the year	<u>\$ 90,000</u>

Dividing the net income of \$90,000 by 2,500 shares, the earnings are \$36 00 per share

Times preferred dividend earned The foregoing calculation does not take into consideration the margin between the earnings per share and the dividend requirement It would make quite a difference whether the requirement were \$6 00 or \$7 00 per share, for the greater the margin, the greater the common stock equity, and the stronger the position of the preferred stock Therefore, a more meaningful measure of the earnings on the preferred stock is the number of times the preferred stock dividend requirement has been earned Assuming in the illustrative case that the preferred stock dividend is \$6 00 per share, the dividend requirement is 2,500 shares \times \$6 00, or \$15,000 Dividing the net income of \$90,000 by \$15,000, it is found that the preferred stock dividend has been earned 6 times

Times bond interest and preferred dividend earned The above procedure of measuring the safety of the dividend on the preferred stock is quite satisfactory if there are no bonds outstanding But if there are bonds outstanding, as in the illustrative case, the bond interest is a fixed claim on the income prior to that of the preferred stock dividend Therefore, investment analysts compute the number of times the preferred dividend has been earned on the "over-all" basis This is done by combining the bond interest and the preferred dividend, and computing the number of times the total of the two has been earned In the illustrative case it would be $\$90,000 \div (\$30,000 + \$15,000) = 2$ times

The "over-all" basis is applied in a similar manner to calculate the number of times interest is earned on junior bond and preferred stock issues.

Common Stock Measurements

Book value of a share of common stock The book value of a share of common stock, if there is no preferred stock outstanding, is the total capital divided by the number of shares outstanding. Thus, the book value or equity per share includes retained earnings and other additions to capital. When preferred stock is outstanding, its amount is deducted from the total capital before dividing by the number of shares of common stock outstanding.

Dividends in arrears on cumulative preferred stock represent a claim against retained earnings and should be deducted from the equity of the common stockholders.

If the preferred stock is participating, adjustment will be made in accordance with the participation provisions.

Thus, if a corporation has outstanding

7% preferred stock, par value \$100	
Outstanding, 500 shares	\$ 50,000
Common stock, no par value	
Outstanding, 50,000 shares	250,000
Retained earnings	35,000

and there is one year's dividend in arrears on the preferred stock, the book value of a share of common stock is computed in the following manner:

Common stock		\$250,000
Retained earnings	\$35,000	
Less Preferred dividend in arrears	<u>3,500</u>	<u>31,500</u>
Common stockholders' equity		\$281,500

The common stockholders' equity, \$281,500, divided by 50,000, the shares outstanding, gives a book value of \$5.63 per share of common stock.

The book value of a share of common stock has been assigned undue importance by some investment analysts. Those who understand the nature of the balance-sheet data know that the stated amounts are not "values" in the commonly-accepted sense of the word. Therefore, a computation based on these stated amounts cannot be a precise measure of "value." Rather it is the equity per share in accordance with conventional accounting. However, where there is a great discrepancy between the book value and the market price it would be well for the analyst to seek

to account for the difference. Such procedure might lead to the discovery of a stock that is underpriced in the market.

Earnings per share on common stock The amount earned per share of common stock is a measure commonly used by the analyst. It is the amount of the net income available for the common stock divided by the number of shares outstanding.

If the net income available for the common stock is \$103,000 and there are 10,000 shares outstanding, the earnings per share on the common stock are $\$103,000 \div 10,000$, or \$10.30 per share.

Price-earnings ratio The selling price of a share of stock divided by its earnings is known as the price-earnings ratio. If a share of stock is quoted at 112 and the earnings during the past year were \$8.50 per share, then the price-earnings ratio is $112 \div \$8.50$, or 13.2 times previous year's earnings. Some analysts consider the price excessive when it is above 16 times earnings.

The Yield The yield or return on a common stock investment is the ratio of the dividend to the market price of the stock. For example, if a common stock is quoted in the market at \$40 and it is paying a dividend at the rate of \$2.40 per annum, the yield is $\$2.40 \div \40 , or 6 per cent.

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